LAPTOP REVIEW: DATAVUE SNAP 1+1 ★ FREE

LA's COMPUTER MAGAZINE

FEB. 6, 1989 • 53

# MICROTIMES™

## ALL ABOUT COMPUTER VIRUSES

WHAT THEY ARE
+
WHAT THEY DO
+
WHAT YOU CAN DO ABOUT THEM

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COLOR: MAC TO PC & BACK

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*PC Magazine, January 12, 1988

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MICROTIMES™

# computer viruses a special report

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## Correction

The photos of Doug Engelbart which appeared in our January issue were taken by Matt Herron. The credit "Copyright © 1989 by Matt Herron" was inadvertently omitted. We apologize to Mr. Herron and to our readers for this omission and for any misunderstanding or inconvenience it caused.

*—MicroTimes editors*

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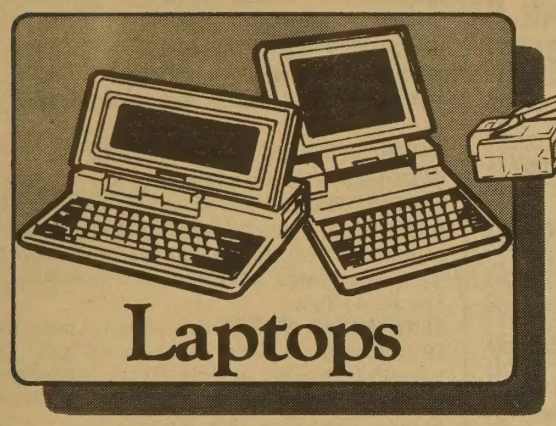
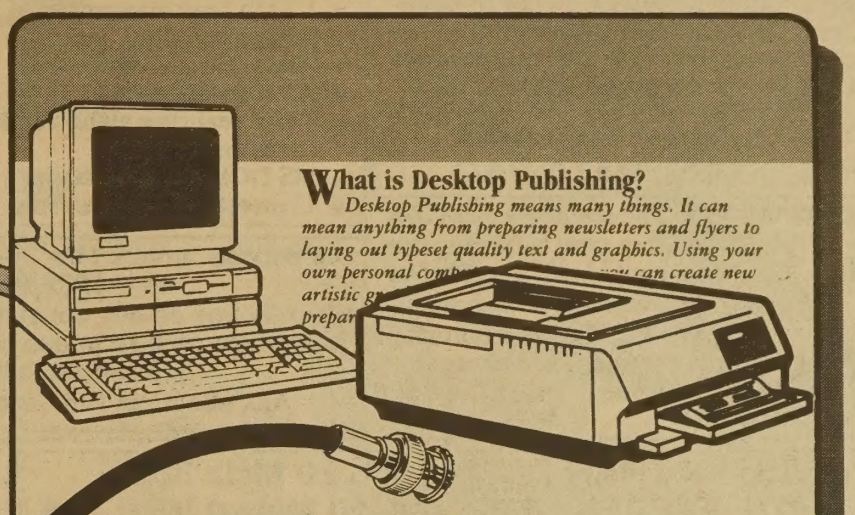
# We're the one source for all your network connections...



Laptops



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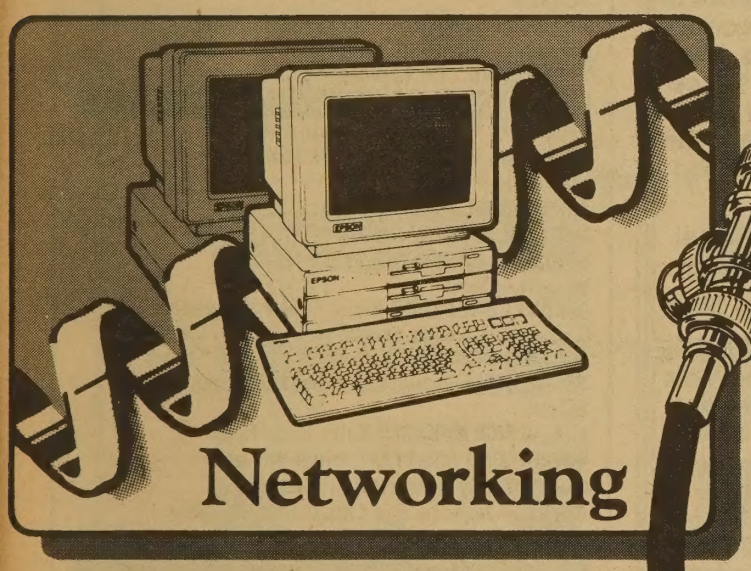

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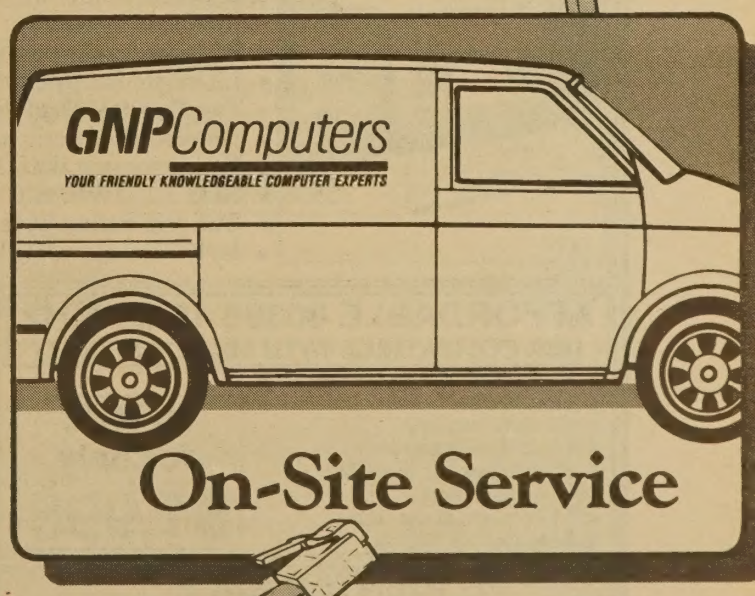


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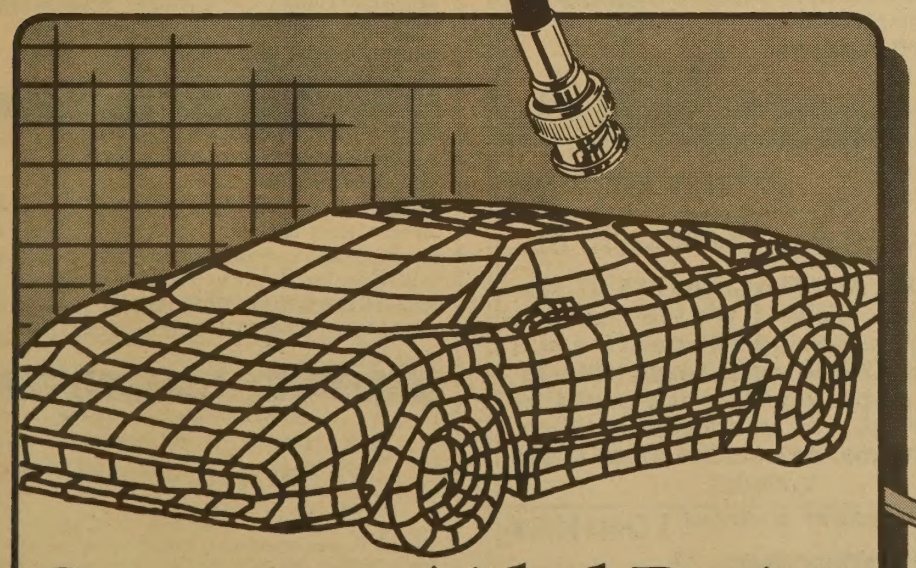

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- 8 expansion slots
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- AT style keyboard
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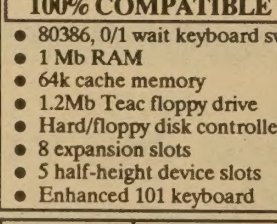

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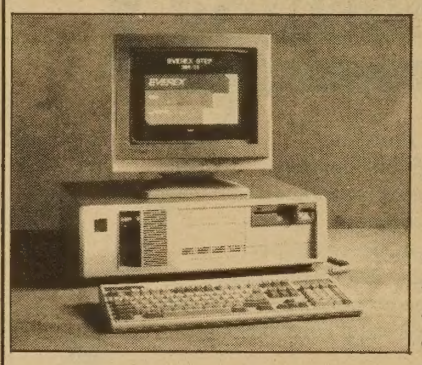

- 80386 32-bit CPU, 20/10/6.7 MHz switchable, 0 wait-state operation
- 2 Mb 32-bit RAM expandable to 8Mb on motherboard, & 16Mb w/ 32-bit exp. slot
- 64K-256K cache of 25ns static RAM
- 80387 & Weitek 1167/87 support
- 8-digit alpha-numeric LED display
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16 & 25 MHz models available now

**John Dvorak of PC Magazine says, "I've seen some really hot 386 machines in the past couple of weeks. The absolute fastest I've seen is the Everex 386 - the one to watch."**

**Speed ratings:**
**Norton: 24.30**
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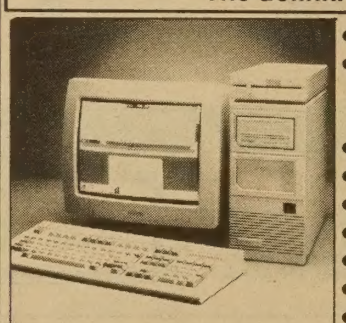
**The definitive Personal Data Pac computer**



- 80286 running at 6/8 or 8/10 MHz
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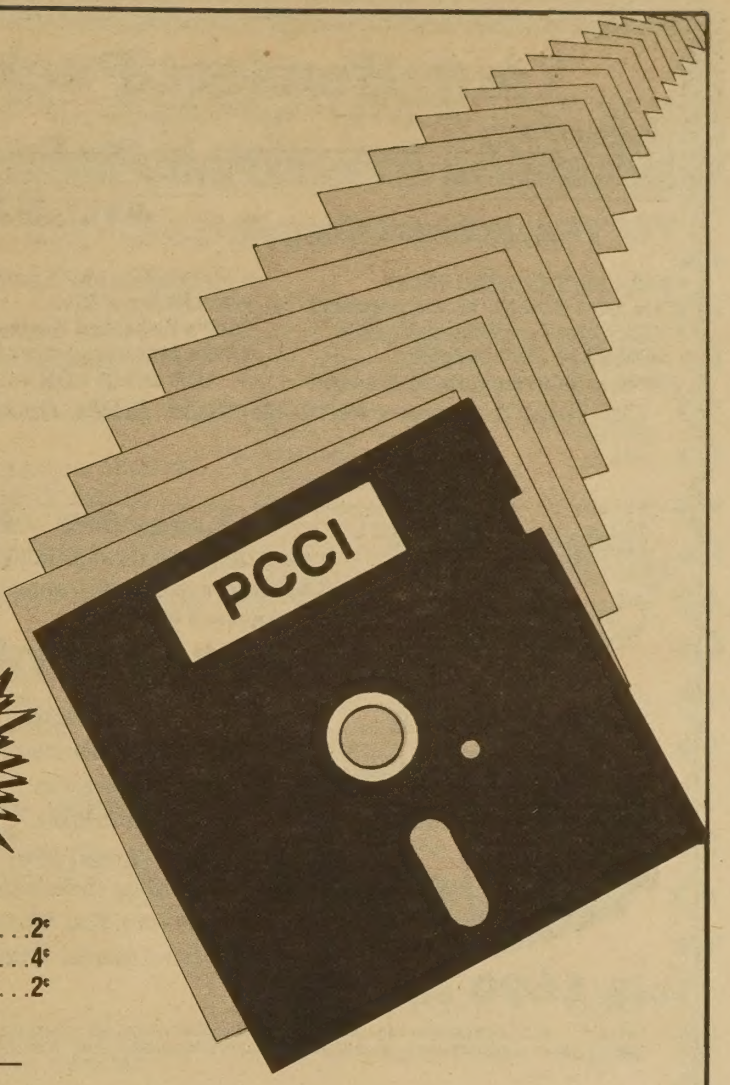


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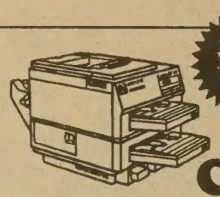

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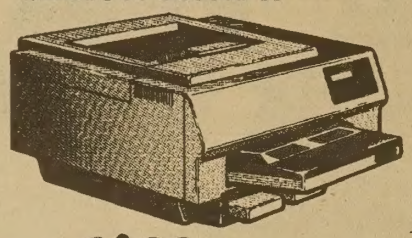

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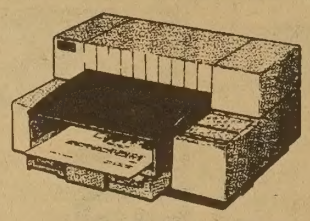

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# CALENDAR OF EVENTS

**February 5-7 SAFECON-Software And Firmware CONference.** San Jose. MultiDynamics, Inc. Call: Anne Weber, (714) 669-1201.

**February 5 Computer Show And Sale.** San Diego. Golden Gate Shows. Call: (415) 388-8893.

**February 6 Marketing The I.S. Organization Internally Workshop.** Los Angeles. Ouellette & Ass. Call: (603) 623-7373.

**February 6–10 5th International Conference On Data Engineering.** Los Angeles. The Computer Society Of The IEEE. Call: (202) 371-1013.

**February 6–9 Buscon/89-West: The Bus/Board Users Show And Conference.** Santa Clara. Buscon/89-West. Call: Jill Protheroe, Ext. 221, (203) 852-0500.

**February 7-10 16 & 32 Bit Microprocessor System Design Course.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**February 7-10 C Programming: Hands-on Workshop.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**February 7-10 Software Project Management Tools & Techniques Course.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**February 7-10 16 & 32-Bit Microprocessor System Design Course.** Los Angeles. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166

**February 8-10 Software Requirements & Design Specifications Course.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**February 10-11 The 1989 Digital Photography & Editing Conference.** Sunnyvale Hilton Hotel, Sunnyvale. Sacramento Bee & The San Jose Mercury News. Call: George Wedding, (916) 321-1166.

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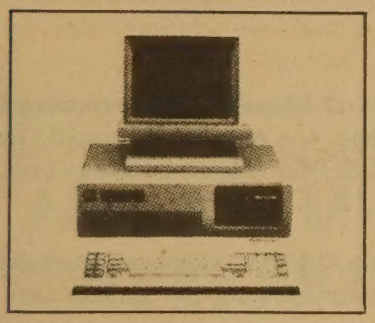

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- 1 MB high speed static column RAM installed
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- 14" flat screen amber or paper white monitor
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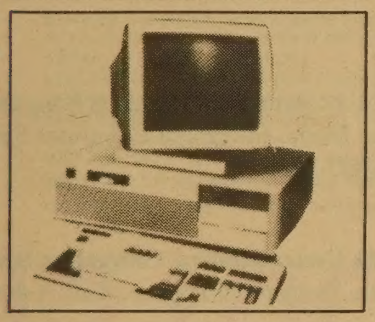
- Color upgrade (640x200). . . . . .add 160
- EGA upgrade (640x350) . . . . . .add 395
- NEC II Multisync Monitor w/VGA card . . . . . .add 740
- 360 KB floppy disk drive . . . . . .add 65
- 1.44 MB 3½" floppy drive (PS 2 comp.). . . . . .add 110
- ST 251 40 MB hard disk (39 ms) .add 385
- ST 251-1 40 MB hard disk (28 ms) . . . . . .add 425
- ST 4096 80 MB hard disk (28 ms)add 645



## 286 SYSTEM: $1475

- 6/10 MHz (80286-10 CPU)
- 640K RAM on board
- 1.2 MB floppy drive
- 200 watt power supply
- Monochrome/graphics card
- 2 parallel ports
- 1 serial port (second optional)
- 1 game port
- Socket for math coprocessor chip
- On board clock/calendar
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- **FREE AMBER TTL monitor w/swivel and tilt**
- **40 MB Miniscribe 3650 hard disk w/controller**

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### OPTIONS

- Color upgrade (640x200) . . . . . .add $160
- EGA upgrade (640x350) . . . . . .add 395
- 40 MB ST-251-1 (28ms). . . . . .add 130
- 40 MB ST-251 hard disk (39ms). . .add 95
- 360K floppy disk drive. . . . . .add 65
- 720K floppy disk drive. . . . . .add 89
- 1.44 MB 3½" floppy disk drive . .add 110
- VGA upgrade . . . . . .add 740

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### OPTIONS

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- EGA upgrade (640x350) . . . . . .add 395
- 360K floppy disk drive. . . . . .add 65
- 720K 3½" floppy disk drive . . . . .add 89

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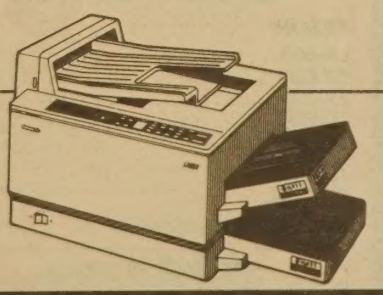

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**February 10 Understanding Computers Seminar.** Anaheim. Padgett Thompson. Call: 1-800-255-4141.

**February 13 Understanding Computers Seminar.** San Diego. Padgett Thompson. Call: 1-800-255-4141.

**February 14-17 Advanced C Programming: Hands-on Workshop.** Los Angeles. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

**February 14-17 UNIX* Hands-on Workshop.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**February 14-17 Structured Design & Programming Course.** San Diego. Integrated Computer Systems. Call: 1-800-421-8166.

**February 15 Understanding Computers Seminar.** Los Angeles. Padgett Thompson. Call: 1-800-255-4141.

**February 15 Understanding Computers Seminar.** Long Beach. Padgett Thompson. Call: 1-800-255-4141.

**February 16 Nanocomputers And Molecular Engineering.** Stanford University. Software Entrepreneurs' Forum. Call: Barbara Cass, (415) 854-7219.

**February 19 Glendale Computer Show & Sale.** Glendale. East-West Computer Shows. Call: (415) 388-8893.

**February 21-24 Image Processing & Machine Vision Course.** Los Angeles. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

**February 22-24 Software Maintenance Course.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**February 22 LA 99er Computer Group Meeting.** Los Angeles. LA 99er Computer Group. Call: (213) 271-6930.

**February 22-23 Consulting Skills For The Information Processing Professional.** Los Angeles. Ouellette & Ass. Call: (603) 623-7373.

**February 26 Computer Show And Sale.** Oxnard. Golden Gate Shows. Call: (415) 388-8893.

**February 27-March 3 Modeling And Simulation Of Engineering Systems In The Supercomputer/Minisupercomputer Era Short Course.** Los Angeles. UCLA. Call: (213) 825-1047

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| • AT I/0 multi-function card (2 serial/2 parallel) | add $ 40 |
| • 40 MB ST-251 hard disk option (39 ms access time) | add $ 345 |
| • 40 MB CDC hard drive (24 ms access, voice-coil, auto-park) | add $ 425 |
| • 72 MB Micropolis hard disk (28 ms, full-ht, voice-coil) | add $ 545 |
| • ESDI, 92 MB CDC hard disk option (DTC ESDI controller, 16 ms) | add $1100 |
| • Tower case option | add $ 160 |
| • 1.44 MB 3.5" Floppy Drive | add $ 85 |
| • 360 KB 5.25" Floppy Drive | add $ 70 |

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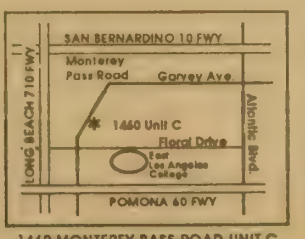

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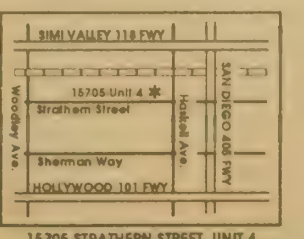

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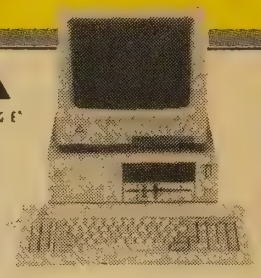

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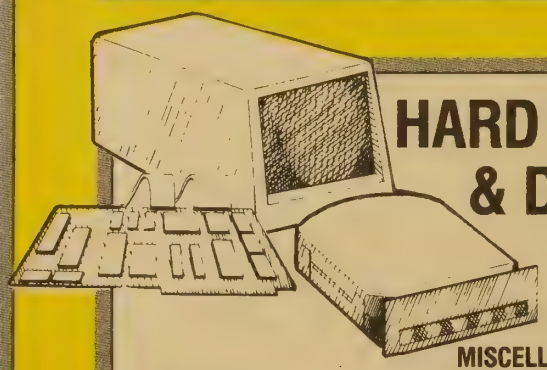

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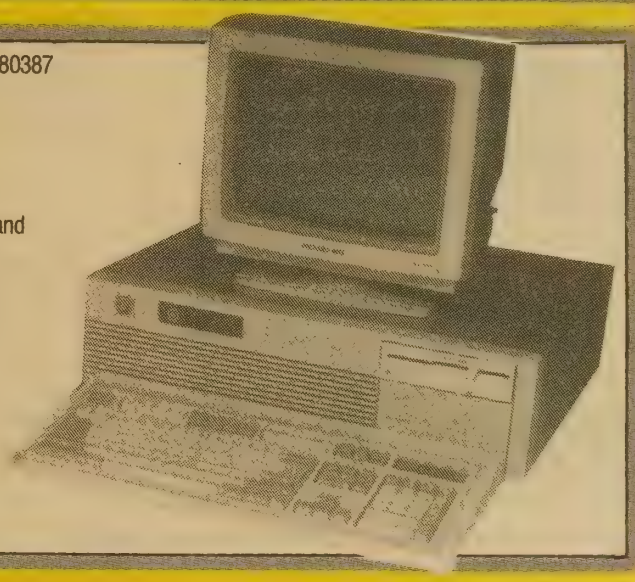

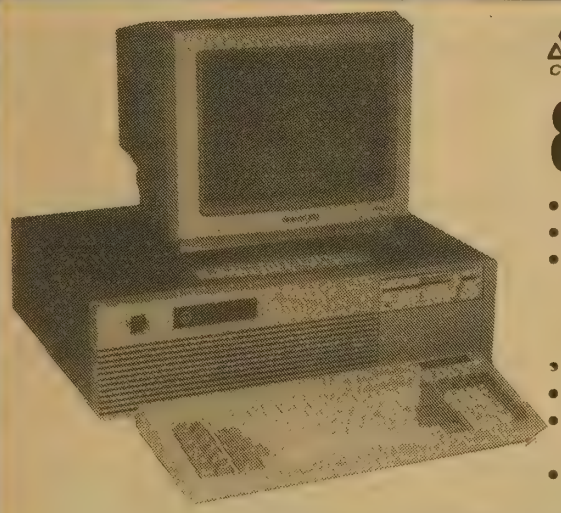

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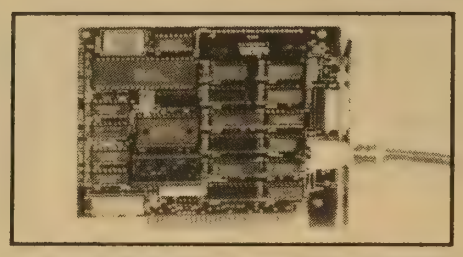

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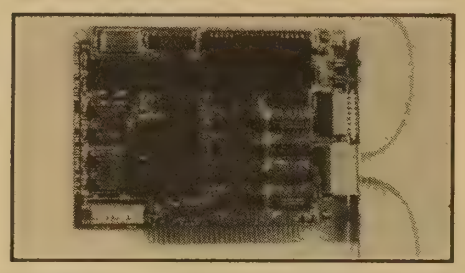

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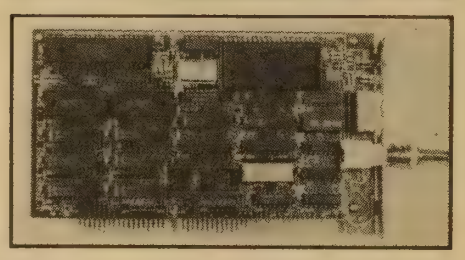

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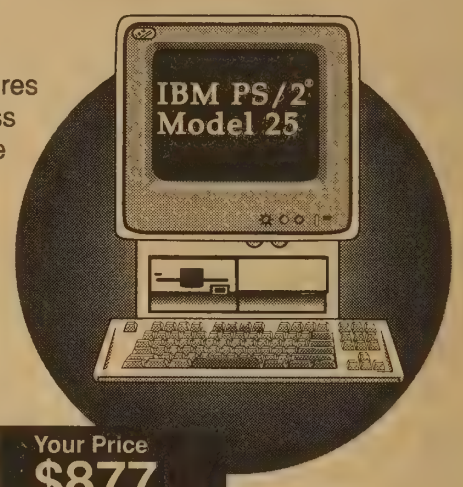


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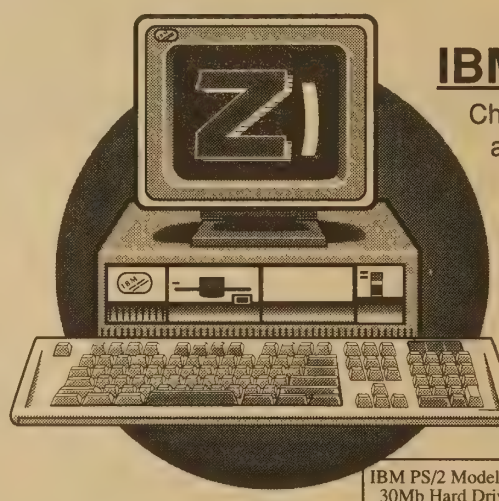

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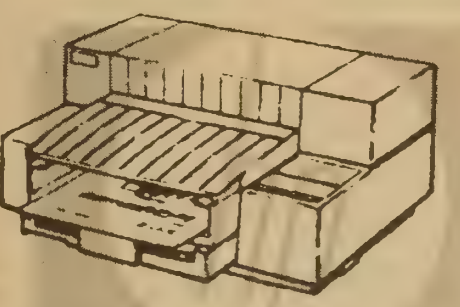

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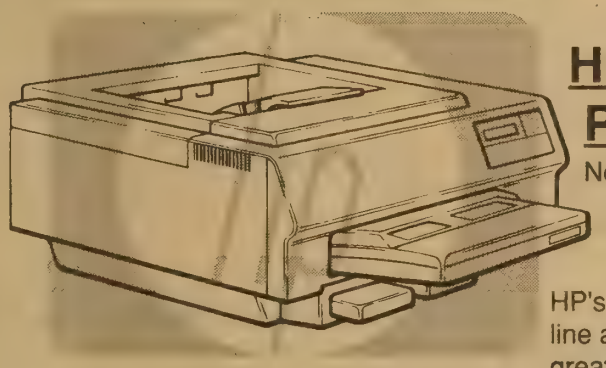

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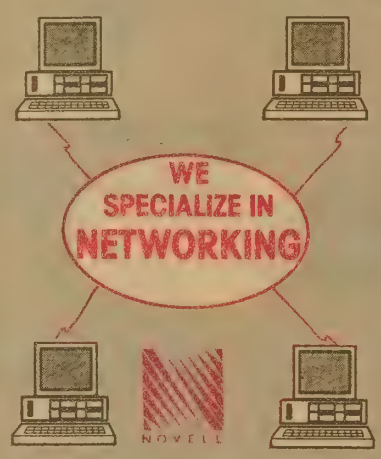


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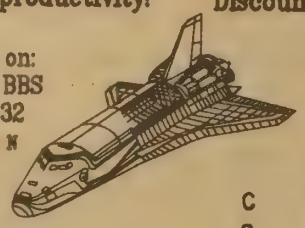

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**March 29-31 Software Quality Assurance & Testing Course.** San Diego. Integrated Computer Systems. Call: 1-800-421-8166.

**March 29–31 Third Annual Parallel Processing Symposium.** Fullerton. The Computer Society Of The IEEE. Call: (714) 738-3414.

**March 30-31 Western Educational Computing Workshops.** UC, Santa Cruz. California Educational Computing Consortium. Call: (415) 338-1212.

**April 5-7 Micro-Mainframe Connectivity: Practical Linking Tools & Techniques Course.** Los Angeles. Integrated Computer Systems. Call: 1-800-421-8166.

**April 5-7 Software Maintenance Course.** San Diego. Integrated Computer Systems. Call: 1-800-421-8166.

**April 10-14 Hong Kong International Computer Conference.** Hong Kong. American Federation of Information Processing Societies, Committee on Science and Technology. Call: (312) 299-4227 or 299-4270.

**April 10-13 MACdex/Spring (The Distribution Trade Show For Macintosh-Related Products And Services).** Chicago. The Interface Group. Call: (617) 449-6600.

**April 18-20 Connect '89, The Technical Conference And Exposition For MIS/Communications Professionals.** Boston World Trade Center. Hill and Knowlton. Call: (617) 330-7630.

**April 26–28 Dataquest's 1989 Computer Storage Conference.** Santa Clara. Dataquest. Call: 1-800-624-3282.

**May 1–3 Physical Design Workshop: Module Generation & Silicon Compilation.** Newport Beach. The Computer Society Of The IEEE. Call: (415) 494-4845.

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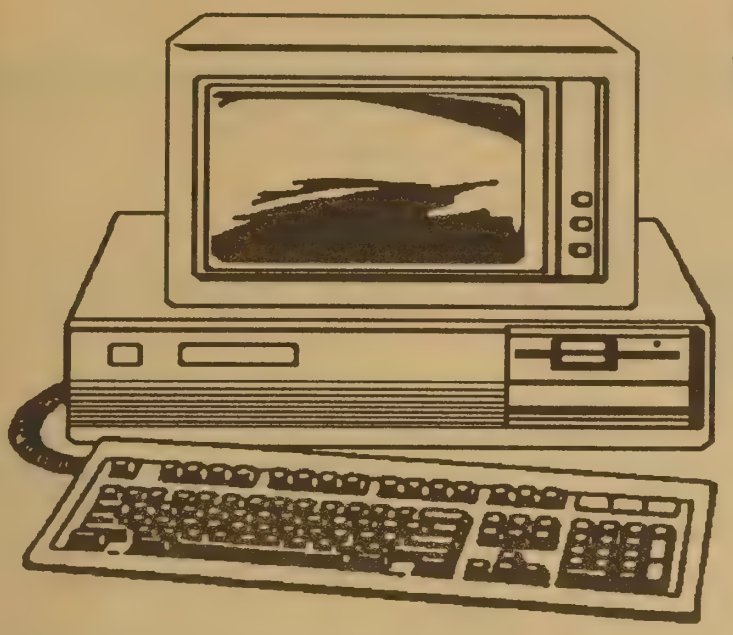

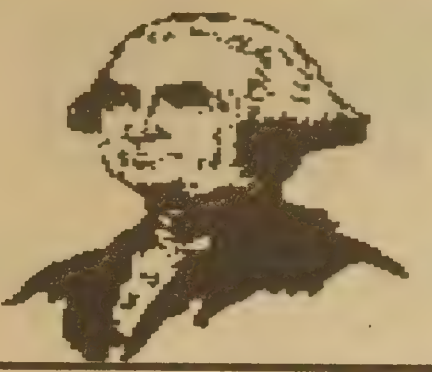

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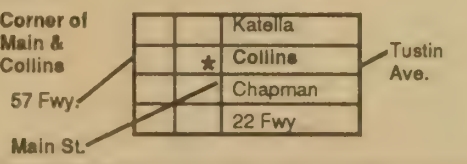

# NEWS AND ANALYSIS

BY PAUL HOFFMAN

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*Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.*


# Solbourne Introduces First Non-Sun SPARC Workstation

When Sun introduced the SPARC CPU architecture, they said that they wanted competition, and now they have the first of it. Solbourne Computer, a Colorado-based startup backed by Japanese giant Matsushita, introduced two workstation computers that compete directly with the Sun 4/260 and Sun 4/110. The Solbourne Series4 computers run at approximately 10 MIPS and are completely software compatible with the Sun-4 series. Solbourne is the first of many manufacturers who have taken up Sun's challenge in the SPARC arena by introducing computers that are faster, have more features, and cost less than Suns. In addition, the Solbourne systems are multiprocessing machines (with up to four processors), while the Sun systems can only support a single processor.

Solbourne has already begun volume production of the workstations, and says that its testing of software for the Sun-4 series has shown absolutely no incompatibilities. This is aided by Solbourne's licensing of the SunOS operating system, SunView and NeWS windowing software, and NFS and ONC networking software from Sun. According to manufacturers of products that run on the Sun-4 series, the Solbourne performs flawlessly and often runs a bit faster than the comparable Sun systems. The Solbourne systems use the same Fujitsu SPARC CPU that Sun uses in its Sun-4 series.

The new systems, dubbed the 4/601 and 4/602, each come with 16 Mb of RAM, a 327 Mb disk, and a 150 Mb tape drive. They also include a one-year service contract. The systems cost around $50,000, making them less expensive than the similar Sun systems at about the same speeds.

Solbourne has already announced that it expects to have much faster systems within a year. Solbourne is already working on an ultra-large scale integrated (ULSI) version of the SPARC CPU, which would allow them to make systems with fewer chips, bringing the price down while increasing the speed. This could drop the price of workstations by half in two years if the ULSI chip is successful.

In addition, Solbourne is heavily backed by Matsushita, which is in the top 20 companies in world-wide computer revenues. Matsushita's computer revenues from mid- and large-sized computers is currently less than 5%, and it will rely heavily on Solbourne to boost that in the next few years. Matsushita, whose total company revenue was $38 billion last year, is heavily committed to manufacturing in the US, so it is likely that the Solbourne computers will start being built here soon. Matsushita has already stated that it will use its clout in Japan to help heavily market the Solbourne computer throughout Asia. This overcomes one of the most common problems for US startup companies and gives Solbourne a strong push towards volume production.

## DEC Reenters Workstation Market

DEC is not pulling any more punches with its mid-level systems. In a direct attack on Hewlett-Packard, Apollo, and Sun, DEC introduced new workstations that use the VAX architecture and a new RISC-based system with a CPU designed by Mips Computer. It also announced new PC-compatible computers, manufactured by Tandy, that can be networked to the new systems. To tie them together, it also announced that it will support the DECWindows user interface on a wide range of computers. The announcements showed that DEC is no longer betting the company on the VAX operating system and architecture, and is willing to open up its marketing operations to many diverse systems.

The very low prices of the new workstations stunned many observers. DEC normally prices new offerings high and brings the price down as it creates more powerful variants of the computers. Instead, DEC introduced the new systems at a price/performance ratio much lower than comparable H-P and Sun workstations. In another new strategy, DEC is offering the new workstations without hard disks, indicating that it is fully committed to supporting them over networks from the beginning. The reaction to the new announcements, especially from large corporate sites who use higher-end DEC equipment for engineering and financial tasks, was much more positive than for other announcements in the past few years.

The new RISC-based workstation, the DECstation 3100, is rated at 14 million instructions per second (MIPS), about twice as fast as the Sun-4/110 with which it will compete; the cost, however is 40% lower. DEC took a gamble by using the Mips Computer RISC chip, since there is not a great deal of software ported for it. However, the initial announcement was supported by many manufacturers who had early models of the DECstation 3100, including Autodesk and Natural Language Incorporated. The bare-bones system costs $11,900 and comes with 8 Mb of RAM, built-in Ethernet networking and SCSI disk interfaces, and a 15-inch color monitor.

DEC also bolstered its VAX line with the VAXstation 3100, 3520, and 3540 systems. The diskless version of the VAXstation 3100, which runs at 3 MIPS and comes with 8 Mb of RAM, costs only $8000. It will run VMS applications only. The

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# NEWS AND ANALYSIS

VAXstation 3520 and 3540 models are meant as graphics workstations. running at 5 and 10 MIPS, respectively. They will support both the VMS and ULTRIX operating systems, running symmetrical multiprocessing with either 2 or 4 CPUs in each system. They will come with 19 inch high-resolution color monitors.

On the lowest end, the new DECstation PCs are intended for sites which must use PC compatibles but want to buy DEC brand equipment. DEC's previous foray into the PC market, the VAXmate, was a dismal failure in the market. The new DECstation PCs have a much better chance than the VAXmates (although no one is expecting them to sell well outside of the DEC market), since they are being produced by Tandy, which already does extremely well with compatibility and reliability. The DECstation 210 is an AT clone, and the DECstation 316 and 320 are 80386-based systems with lots of RAM; all will run under MS-DOS.

## Macworld Expo Roundup: Excited About Upgrades

The number of really new products at Macworld Expo was smaller than at previous shows, but people walking the aisles were looking carefully at the upgrades being shown in many booths. The just-announced SE/30 did not generate much interest, due mostly to high price and availability of low-cost accelerator boards for the current SE. The hit of the show was Silicon Beach's *SuperCard*, an extension/replacement for Apple's *HyperCard*.

**Although the SE/30 wasn't a smash hit with show goers, it set the stage for many software vendors to start upping the requirements for advanced software.**

Although the SE/30 wasn't a smash hit with show goers, it set the stage for many software vendors to start upping the requirements for advanced software. Many new high-end packages must be run on a Mac II, a Mac SE/30, or an SE or Plus with a 68020 or 68030 accelerator board in order to run at adequate speeds, and many now require 2 Mb of RAM. This trend is not universal, but many software developers said that they would target only higher-end Macs with their packages because there was now a wide range of fast Apple systems.

Many hardware vendors also jumped on the SE/30 bandwagon by announcing add-in cards for the new machine. The slot in the SE/30 is different from the slot in the SE, so hardware manufacturers had to change the configuration of their boards. Most of the add-in boards announced the same day as the SE/30 were communications and graphics boards. Most manufacturers praised Apple for not only giving them plenty of time for redesigning their boards, but also for making the redesign fairly easy by keeping the bus structure relatively similar.

By far the most popular piece of new software at the show was *SuperCard* from Silicon Beach. *SuperCard* extends Apple's *HyperCard* by allowing the user to create programs that run without *HyperCard* and by eliminating many of the restrictions that have frustrated *HyperCard* users. If you have already created a *HyperCard* stack, you can import it directly to *SuperCard*, then use *SuperCard*'s features to extend it. For example, programs produced in *SuperCard* can have their own menus, color, multiple windows, cards of any size, and cards that

# Up Again, Down Again: Apple Lowers Mac Prices

Responding both to the heavily negative press about their earlier price increase and to the dropping cost of RAM and other chips in their systems, Apple lowered the prices on many of its Macintosh systems and peripherals. This is most easily seen in the drop in the expansion RAM for the Macintosh, which was dropped by 17% (although it is still about twice as high as the same RAM products from other vendors). The reductions were all in the high end of the Macintosh line, and averaged about 15%.

The price drop cannot be wholly attributed to falling chip prices, however. For example, Apple made significant price cuts in its hard disk line, which is generally unaffected by chip prices. This is certainly due to increased competition in the peripherals market and to the perception that Apple's peripherals are overpriced. In the announcement of the lower prices, Apple worried that many users were buying low-cost Macs and upgrading them with third-party peripherals such as accelerator boards and other people's RAM. Although this practice will certainly continue after the price cuts, the cuts will help bring back corporate buyers who prefer Apple-label products.

## Apple's New Prices

| | Previous Price | New Price | % Reduction |
|---|---|---|---|
| Macintosh SE, 2 Mb, 40 MB hard disk | $5,069 | $4,369 | 14% |
| Macintosh II, 4 Mb, 40 Mb hard disk | $8,069 | $7,369 | 9% |
| Macintosh IIx, 4 Mb, floppy only | $7,769 | $6,969 | 10% |
| Macintosh IIx, 4 Mb, 80 Mb hard disk | $9,369 | $7,869 | 16% |
| Macintosh 2 Mb memory expansion kit | $1,199 | $999 | 17% |
| Macintosh 4 Mb memory expansion kit | $2,399 | $1,999 | 17% |
| LaserWriter IINTX 4 Mb memory expansion kit | $2,399 | $1,999 | 17% |
| Internal 20 Mb hard disk | $ 999 | $ 799 | 20% |
| Internal 40 Mb hard disk | $1,599 | $1,199 | 25% |
| Internal 80 Mb hard disk | $2,099 | $1,699 | 19% |
| External 20 Mb hard disk | $1,099 | $ 899 | 18% |
| External 40 Mb hard disk | $1,699 | $1,299 | 24% |
| External 80 Mb hard disk | $2,199 | $1,799 | 18% |

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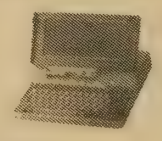

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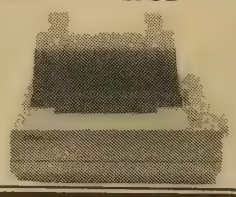

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# NEWS AND ANALYSIS

can be sized and shaped by the user. Although the program will not be available for a few months, the demo running in the Silicon Beach booth worked well and showed off all of *SuperCard*'s advanced features.

*SuperCard* wowed not only *HyperCard* fans, but many application programmers as well. Since the programs produced by *SuperCard* can be run by anyone, many programmers expect *SuperCard* to become a major new development environment for the Macintosh. Its low cost ($199) and its extremely easy method for linking cards will probably put pressure on other inexpensive development environments such as Lightspeed C and Pascal. Since *SuperCard* can use all of the resources that people have been developing for the large *HyperCard* market, *SuperCard* developers will have much less work to perform for linking *SuperCard*-based applications to the rest of the Macintosh. Apple supports Silicon Beach's efforts to extend the *HyperCard* metaphor, and the product introduction was praised by many Apple executives.

Claris introduced *MacWrite II*, a major revision to the popular *MacWrite* program, showed a major update to *MacDraw II* and introduced *Claris CAD*. Although Claris was touting *MacWrite II* as a huge improvement, it contained relatively few new features over *MacWrite* 5.0, the latest version. *MacWrite II* is faster, shows headers and footers on the screen as they will be printed, and offers a more powerful search and replace feature. The formatting available in *MacWrite* 5.0 is significantly expanded, and Claris added a thesaurus desk accessory. The upgrade from 5.0 to II is $65, and the package will sell for $249.

The features added to *MacDraw II* make it more useful for creating business presentations and charts, such as notes that are attached to objects in a drawing and a slide management feature. The upgrade for *MacDraw II* is $30.

*Claris CAD* is a two-dimensional drafting package aimed at designers and drafters. It supports all major drafting standards and has built-in plotter support. It costs $799, and is available as an upgrade to *MacDraw II* for $399.

## Apple Announces New Mac SE/30

Emphasizing the higher end of the personal computer market again, Apple introduced the Macintosh SE/30, an SE with a 68030 CPU and 68882 floating-point math coprocessor in the small Macintosh box. The SE/30 is essentially a Macintosh IIx in a small box with a small screen. Apple hopes that the SE/30 will attract power users who are not interested in the large size of the Mac II but are willing to pay for a system that runs faster than most of the 80386-based MS-DOS systems of today.

The SE/30 comes with Apple's new 3.5" high-density drive which is compatible with 1.44 Mb MS-DOS diskettes. There are 40 MB and 80 Mb hard disk options, and it comes with either 2 or 4 megabytes of

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# NEWS AND ANALYSIS

RAM. The SE/30 can be expanded to 8 Mb of RAM, twice the amount of the standard SE. It has an expansion slot similar to the current SE, but that gives direct access to all the signals of the 68030 CPU. Thus, boards for current SEs will not work with the SE/30, but hardware designers say that it is easy to change to the new design.

Apple is introducing the SE/30 in two models. The lower-cost model has 2 Mbof RAM and a 40 Mb disk for $5069, while the higher-cost model has 4Mb of RAM and an 80 Mb hard disk for $6369; both prices exclude the keyboard. These prices put it between the current SE and the high-end Mac IIs, which have separate monitors and more slots for expansion. Like other Macintoshes, the SE/30 comes with the Macintosh operating system and *HyperCard*.

The SE/30 shows that Apple is continuing to push the Macintosh to higher power and is trying to reach the people who are entranced enough with it but need to justify its purchase over a PC clone. With the cost of a fully-configured 80386-based clone dropping below $2500, Apple has to push the Mac into the hands of more higher-end users in order to be considered for large corporate buys. Of course, one of the best ways to do this would be to lower the price, but, barring that, Apple will try to woo these top-level buyers with a range of systems that are as powerful as any PC that they could buy but which run all the familiar Macintosh applications. Since OS/2 for the 386 is more than a year off, it is likely that Apple's strategy will make additional inroads into this market.

## dBASE IV's SQL Unstable

Ashton-Tate admitted that the SQL portion of its recently-released *dBASE IV* gives wrong results without warning and can also generate unexplained internal errors with some queries. The errors are quite serious in that they indicate that the internal SQL code in *dBASE IV* is unstable and was released without sufficient testing. The bugs were initially reported by Quadbase Systems, which markets a competing SQL interface, but were independently confirmed by many magazines and database experts.

There appear to be many problems with the SQL query module that appear as incorrect and inconsistent answers to database queries. For example, you can get two different results asking the same question on the same database. Ashton-Tate has said that it will announce procedures to work around the known problems, although this means that everyone using *dBASE IV* must know of all the problems and recognize them in their work. As it stands, people using *dBASE IV* should not use the SQL query module for querying datasets until Ashton-Tate has released a new version. The company has said that it will put out a new version to fix the known problems, although it did not give an estimate when. Ashton-Tate did not say how they would distribute the information or the update, or whether or not the update would be free.

# NEWS AND ANALYSIS

## OSF's Mixed User Interface For UNIX

In a bid to keep many of its clients happy without estranging anyone, the Open Software Foundation (OSF) chose three contenders for its user interface to merge into a single package. DEC will supply the toolkit necessary for building and modifying the user interface, Microsoft will supply the Presentation Manager user interface, and Hewlett-Packard will supply technology to make the windows consistent. Like Apple's Macintosh, the user interface will come with a style guide for programmers so that programs have a similar look. The entire interface will work with the MIT X Windows protocols, so that programs current working under X Windows will be easily ported to the new user interface.

Microsoft's Presentation Manager for UNIX will make up the bulk of the offering, leading many people to wonder what Apple's response to the user interface will be. Apple last year sued Microsoft and Hewlett-Packard, claiming that the look and feel of Microsoft *Windows* and Hewlett-Packard's NewWave infringed on its copyright to the Macintosh interface. Since Presentation Manager looks almost exactly like *Windows* and NewWave, Apple could extend its suit to cover the OSF offering. The project will be put together by a team of DEC and Hewlett-Packard engineers, and will be finished in nine months, according to OSF.

OSF members are in a quandary about what to do about the lateness of the first version of the OSF operating system. Although many are loudly trumpeting the cause, especially now that a user interface that is consistent with IBM's other operating systems has been chosen, but many still plan to release their hardware with AT&T's version V.3 this year. Since the OSF software probably won't be available commercially for more than a year, there will be even more software companies and in-house systems that are dedicated to the AT&T versions of UNIX. A great deal of the success of OSF-based machines will hinge on whether large applications will cross-compile easily to OSF/1. Of course, everyone is saying that they will, but UNIX experts note that the same claims have been made in the past by the same people, and they were often untrue.

In a related story, Oracle, the largest producers of DBMSes for UNIX systems, announced that it was joining both the OSF and the rival UNIX International group. UNIX International, vendors who support AT&T's leading role in the future of UNIX, was formed as a response to OSF's publicity drive, and consists mostly of everyone who is not in OSF. Although there is some overlap in membership, especially among software vendors, Oracle made a point about the equivalence of the two groups by announcing its joining the organizations in the same press release. Many software vendors, and many large UNIX-using sites, are very concerned about the fractionalism of the UNIX market and how it will affect current systems. Oracle, by bringing both groups and making it clear that it has no preference


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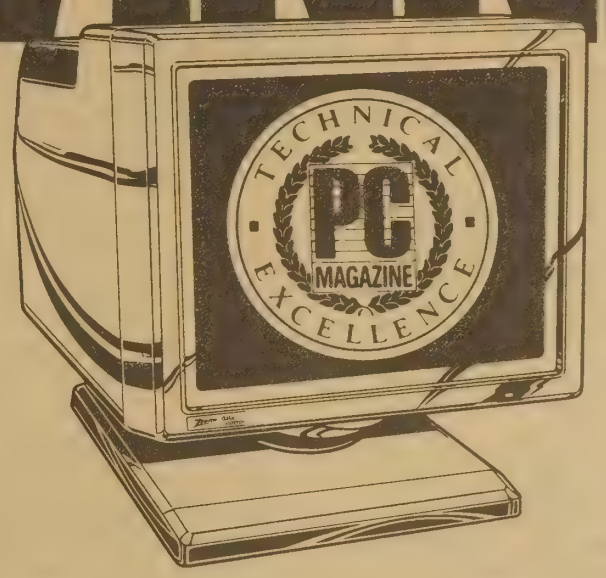


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# NEWS AND ANALYSIS

for either, may help get the two to see that the market goes on without them.

## Nintendo In the News

The most-hyped product of the Christmas season was clearly the Nintendo home video game machine. Last month, Atari sued Nintendo, claiming that Nintendo was illegally keeping competitors out of the market by controlling the manufacture and distribution of the game cartridges that work with the machine. Later, the Software Publishers Association (SPA) supported Atari's claim and says that the Japanese giant has caused the shortage of cartridges that plagued many retailers this Christmas. The SPA says that they are concerned that this type of action, if unchecked, could lead to microcomputer manufacturers using the same sort of tactics and harming the computer industry. The SPA says that only an open market for game cartridges will alleviate the current situation of inflated prices for the Nintendo machine.

Now Nintendo has sued Atari for breach of contract, unfair competition, trademark infringement, and violating the Racketeer Influenced and Corrupt Organizations Act. This is due to Atari putting out their own games that work with the Nintendo system. The suit is pretty much the inverse of Atari's suit against Nintendo, claiming that Atari has no right to create the cartridges, that they violated Nintendo patents in creating the games, and that Nintendo should be able to control the quality of games entering the market. Nintendo specifically claims that Atari's *RBI Baseball* violated an agreement between Atari and Nintendo.

The suit and countersuit are causing some problems in Japan, where lawsuits between companies are very rare, almost unheard-of between companies which are supporting each other. Although the Nintendo Famicom video system is by far the most popular in Japan, many people both inside and outside Nintendo are quietly complaining about the company's distinctly non-Japanese attitude about the American market. Usually, Japanese companies try to make as many friends of their competitors as they can, always being cordial and proper while fighting for market share. Nintendo, from its recent actions, now looks more like an American company rather than a Japanese one, relying on lawyers and high-pressure sales tactics than on long-term alliances.

The first innovative peripheral to come out for the Nintendo machine was shown at the Consumer Electronic Show by Brøderbund. The U-Force controller lets you play various games without using a joy stick and, in fact, without holding anything. U-Force senses hand movement nearby and translates those movements into control signals sent to the game machine. Thus, you can use U-Force to steer a car in a race game by moving your hands as if you were holding the steering wheel. Other games that might use the U-Force peripheral include boxing and fighting games, as well as standard shoot-em-up games. U-Force, which will begin shipping this spring for $70, is about the size of a book and folds open for playing. Brøderbund, who has a patent on the technology, may include the U-Force in future arcade games and controllers for other devices.

## Apple Upgrades A/UX

Trying to assure the world that it has not forgotten UNIX, Apple announced that version 1.1 of its A/UX operating system will be shipped some time in the next few months and that this time they got it right. The first version of A/UX was seriously flawed, both in its ability to interact with Macintosh programs and in its support of UNIX standards. Sales have been dismal, and many people were worried that Apple would drop the package altogether. However, Apple made many significant improvements to A/UX and is hoping that the new release will generate much more interest than the previous one.

A/UX 1.1 now supports Macintosh desk accessories, standard printing, color, and AppleTalk. You can use more Apple devices such as Apple's CD-ROM drive and tape backup system. It now adheres to the IEEE POSIX standard for UNIX systems, version 12. This means that it will run many more non-Macintosh programs with only minor modification. It can also be networked in many ways to other UNIX systems, and can directly support Macintosh media. With these changes, people using a Macintosh II or IIx in a UNIX environment will be more likely to buy A/UX and participate in networks as a UNIX machine. ■


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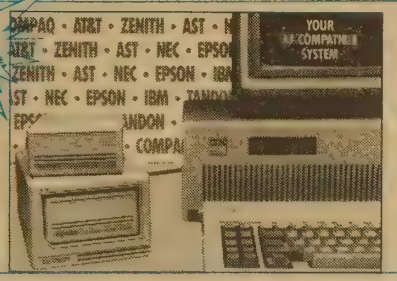


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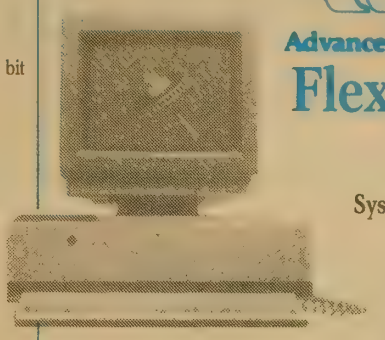

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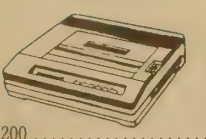

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# Realizable Fantasies:

## College Computer Funds, Personal Preferences, And Revisitations

Most columns review what is. This proposes what could be.

### A Real Fund Fantasy

A workshop at a national computer conference last November reported that over 90% of computer research funding at the nation's top four computer science universities—Stanford, UC Berkeley, MIT and Carnegie Mellon—comes from the Department of Defense!

A fantasy much in need of realization: Let government funding for projects and research not of direct military value be channeled through departments other than the DoD. Channel it through the National Science Foundation, or Department of Education, or NASA, or maybe through an up-front Academic Porkbarrel Program.

Note: Letters to your Congressional representatives—and local newspapers—regarding such funding issues do make a difference. Elected officials typically consider a single letter to be reflective of between 100 and 1,000 similar opinions among their constituents.

### Personal Preferences

From time to time, folks ask me which software I use for this or that. For the most part, I prefer the inexpensive packages—when they are as robust as the high-priced spreads. I find special delight when such software also comes from companies that are small, human-oriented and innovation-inclined.

For word processing, I use Quicksoft's *PC-Write* shareware. Created by Bob Wallace—who also created the term "shareware"—it is powerful, well-supported (even when I call anonymously) and amazingly economical ($15-$89). And, it has shareware's particularly delightful feature that you can get a copy of it and "test" it to your heart's content, free, for as long as you want. (Quicksoft, Inc., 219 First Ave. N #224, Seattle, WA 98109, 206/282-0452.)

For programming, I bought Borland's stuff—*Turbo C, Turbo Pascal*, etc. I can't see any reason to pay three times Borland's price ($149.95) for Microsoft's compilers, when Borland's Turbo-stuff seems to be functionally the same—or maybe better. (Borland International, 1800 Green Hills Road, Scotts Valley, CA 95066.)

For spreadsheets, I've been using Paperback Software's *VP-Planner* and its upgrade ($99.95-$179.95). Partially, I like it because it's reasonably robust, comparable to or maybe better than *1-2-3*—except for limited LaserJet support, at least in my somewhat elderly version. And partially, I like Paperback Software because they provide low-cost, good-quality packages.

But most of all, I support Paperback because they are the target of giant Lotus' infuriating "look and feel" litigation that seemingly seeks to suppress competition through consumptive legal expense rather than legitimate price-and-feature competition. (Paperback Software, 2830 9th St., Berkeley, CA 94710).

For computer-aided drafting, I use the Big Daddy of microcomputing, CAD—Autodesk's *AutoCAD*. In its full-figured form, it is hardly inexpensive. But it has the robustness, features, and support that can only come from unusually talented innovation, powerful extensibility, careful attention to almost a decade of user feedback, significant third-party add-ons—and several million lines of source code that took many years to develop. Furthermore, it is user-programmable via a Lisp system that is part of the package. (Autodesk, 2320 Marinship Way, Sausalito, CA 94965, 415/332-2344.)

### Home Phones Revisited

A few columns back, I pleaded for consumer-priced home phone systems with PBX-style capabilities and functions. Jim Gottlieb of L.A. wrote to refer me to Panasonic's KX-T systems. He noted that their 308 series is under $400 and allows three trunks (incoming lines) and eight stations (extensions, each of which may have more than one phone attached to it). Now, that's neat!

Strange he should mention it: After I wrote the column, I was similarly grousing to telecom wizard Jim Gallaway of GEI in Redwood City. He had also suggested Panasonic's gadgets as being the best thing he'd seen near my criteria. And, about a week before Gottlieb's letter, I took delivery on a KX-T 1232 with joy and hope.

My only hesitancy was that minimum-information brochures were readily available, but a San Francisco phone systems store said it was almost impossible to get the full tech manual for these units without buying a system—hardly an appropriate marketing policy for high-tech areas.

### Apple's Pricing Yo-Yo

After Apple's price increases late last fall, I called for consumers to show reciprocal loyalty by refusing to buy such Apple products until their prices rolled back. Within a week or so of that column's publication in January, Apple reduced many of its prices. This was, no doubt, due to my column (yeah, uh huh, sure—well, it's a nice fantasy...).

**Over 90% of computer research funding at the nation's top four computer science universities comes from the Department of Defense.**

Apple gave several rationalizations for the rollback, but they missed a great opportunity to increase customer loyalty and respect. They could have simply said that part of their reason for the rollback was that their earlier price increases were in error; their outraged customers were right —and they valued their customers' opinions and loyalty (especially after the Christmas selling season was finished).

But they didn't. Sadly, most leaders—executives, managers, politicians—seem rarely willing to publicly admit they err. They have no idea how much such admissions can enhance respect for them among their customers, staff, and voters.

### Quickies

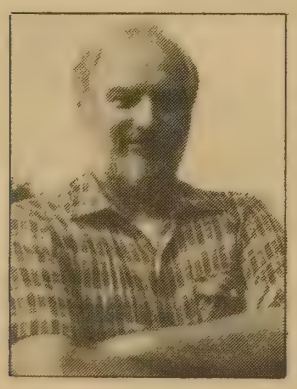
Who was the Silicon Valley figure who told a *San Jose Mercury* reporter that Ashton-Tate's repressive litigation against competitor Foxbase and others was just "A bad case of [male organ] envy"?

Surely some Mac adder has already used "Muse" as a product name. My Webster's says it means "a source of inspiration" or "a guiding genius." Of course, it also refers to the nine Greek goddesses who presided over song, poetry, the arts, and science—but that somehow seems less applicable.

Knowledge of automated information processing is becoming essential for adequately informed decision-makers—including public officials. Here are some experienced computer professionals now in politics and public positions: Ted Laliotis of H-P is a Los Altos Town Councilperson; consultant Marc Kaufman serves on his town's Planning Commission; Walt Reynolds of Applied i is an elected water board Director; and I'm a county community college district Trustee (which has been highly, uh, "educational"). And that's just on the San Francisco Peninsula. Please send details on others.

### Ideas Solicited

Send suggestions for this column to Jim Warren, Realizable Fantasies, 345 Swett Road, Woodside, CA 94062. Published proposals will be attributed to their authors unless anonymity is requested. ■



*Copyright © 1989 by Jim Warren. All rights reserved.* *Jim Warren founded the West Coast Computer Faire, the* Silicon Gulch Gazette *and* Infoworld *newspapers, Video Initiative and the DataCast proposal for broadcast-based paperless electronic newspapers utilizing personal computers. He was the founding host of the PBS* Computer Chronicles *series, founding editor of* Dr. Dobb's Journal, *and founding president of the Microcomputer Industry Trade Association.*

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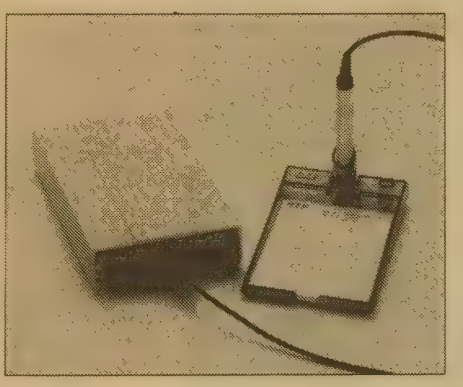

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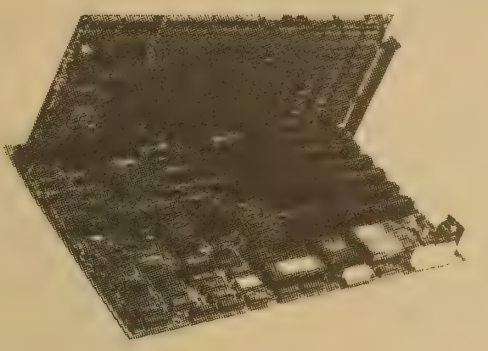

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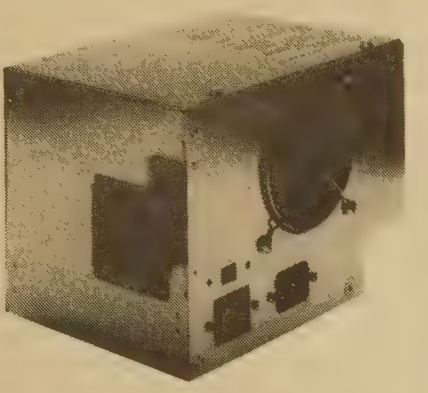

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# The Internet "Virus" Revisited

## *How It Worked, Who Was Affected, What It Means*

**By Sharon Fisher**

It's been called the consummate hack, a youthful prank, a mistake, and a sinister plot. Its author has been called a hero and offered jobs; he's also been called a crook and threatened with lynching or flaying.

"It" is the Internet worm, released November 2, 1988 onto a computer network that spanned much of the globe, where it infested some six thousand Sun and DEC VAX computers.

While the program itself was stopped within hours, and the bugs it exploited were found and stamped out within days, the Internet worm and its repercussions will be providing data for master's theses and program development—and magazine articles—for years to come.

### How It Worked

The program was allegedly written by Cornell graduate student Robert T. Morris Jr., whose father, coincidentally or not, is an expert in computer security. Because it performed no other function, and didn't disguise itself as another type of program, most knowledgeable people have been calling the Internet program a "worm" rather than a "virus," although there is some dissent about this. (See accompanying article "A Software Bestiary" for further discussion of this distinction.)

The Internet worm seems to have broken into systems in three ways, according to a number of experts who have analyzed the code.

First, it exploited a bug in the program used to send mail between UNIX systems. The **sendmail** program, which is not part of UNIX itself but a commonly used utility, had a bug in that meant the program's debug bit was left on, and would allow users to send it a set of commands rather than a user address, as is usual with mail. The Internet worm used this bug to send instructions and copies of itself to other computers. It did this over the Internet, an international computer network (hence the name of the worm).

Second, it exploited another bug in the **finger** utility. Normally, people use finger to find information about other users, such as their full name or whether they're logged in. Because the finger utility (also known as the finger daemon, or a program that runs in the background) didn't check for the length of strings it was passed, the Internet worm could send it a message that was longer than the finger utility's buffers. The information which ran over the capacity of the buffers could then modify the machine's stack, giving it a new set of instructions.

Third, the Internet worm used several brute-force methods of breaking into accounts through checking for no passwords, and then by trying as passwords things such as the user's name or the account's name, words in an internal dictionary, and words in the system dictionary.

Parts of the Internet worm were written specifically for Sun and some Digital Equipment Corp. VAX systems running BSD UNIX (from Berkeley). This meant that other types of machines generally couldn't be infested, and certainly couldn't pass the worm program on to other machines.

As far as people who have examined the Internet worm software can tell, the program wasn't designed to perform any harm on systems, such as destroying files.

However, machines that could be infested promptly began trying to break into other connected machines. Moreover, the Internet worm didn't always check to see if a machine was already infested before attempting to break into it. Therefore, a number of well-connected machines ended up with dozens of copies of the Internet worm, each working hard, resulting in extremely poor performance, some system crashes, and a large amount of machine and network traffic. This is what caught the attention of the people who tracked down and eliminated the worm.

### Detection And Cure

The Internet worm was detected quickly at Lawrence National Laboratories in Livermore and in Berkeley, California, due to the amount of traffic it generated and the closeness with which those networks are monitored because of frequent breakins.

"I got it within three minutes of when it touched my network," says Russell Brand, a computer scientist math programmer for the Livermore labs, who says he reacted by turning off the machines to prevent further infestation.

It took about six hours for a team of UNIX wizards—about ten at Berkeley, and about eight at the labs—to figure out what caused the problem and to develop a fix, Brand says.

At the same time, users at a number of other installations, including Purdue University, had also noticed the problem and had begun developing fixes and posting them to the network, along with warnings to system administrators about how to tell whether their systems had been infested.

For this reason, several wizards noted that disconnecting from the network, which was some administrators' first reaction to the worm reports, was in some respects the worst thing they could


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have done, because they were then cut off from the main source of definitive information about the worm. (There's at least one report of a company that literally severed itself from the network—with a fire ax—because administrators, worried about the company's database, didn't want to take the time to figure out how to disconnect from the network more gracefully.)

As the hours, and then the days, went by, progressively more sophisticated and correct reports on the Internet worm, and ways to detect, kill, and prevent it, were posted to the network. By just a day or so later—about 7 pm on November 3—the worm was essentially stopped.

## Press Reaction

However, as far as the press was concerned, the story was just beginning. Starting on Thursday morning with the *New York Times*, and continuing for several days, stories on the Internet worm took over the nation's front pages and news broadcasts

**Much of the press coverage was hysterical and inaccurate, frightened users who didn't need to worry, called the government's classified computer security into question, and cast aspersions on the same type of UNIX wizards who'd helped eradicate the worm.**

nearly as well as the program itself took over computers. It's unlikely that any other previous computer break-in had generated as much media attention.

While some of the coverage—most notably that of John Markoff in the *New York Times*—was intelligent and accurate, many other stories and broadcasts were hysterical, off-base, or just plain wrong. This frightened users who didn't need to worry, called the government's classified computer security into question, and cast aspersions on the same type of UNIX wizards who'd helped eradicate the worm.

In particular, a number of television news broadcasts used footage or quotes from the movie *War Games* to illustrate their stories about the Internet worm, although the movie had little relevance to the situation. (One opportunistic station quickly scheduled a showing of the movie itself, using the headlines to promote the movie.)

Similarly, when photographing and filming "people" shots for the stories, news people often concentrated on traditional "hacker" images of long hair, beards, bare feet, and eccentric dress, or on the dozens of empty Coke cans and pizza boxes that were scattered around the computer rooms. Although these people were the ones who'd stopped and eliminated the worm, the implication was that they were somewhat unstable themselves. (Ironically, when Morris and his father appeared on television later in the week, the young Morris was clean-cut, while his father had long hair and a beard.)

The media often focused on the danger to the government's classified information, such as to the Strategic Defense Initiative system (Star Wars). In reality, according to Brand and others, systems containing classified data are not on the Internet, and aren't linked to unsecure systems. While a number of government installations were infested with the virus—Lawrence Laboratories, for example—no classified systems were infested.

Some of the hysteria can be blamed on enterprising vendors who saw the media attention as a way to focus attention on their security products. For example, a number of companies that produce so-called "vaccine" programs, which purport to protect PCs and Macintoshes from virus infections, called the press to offer their employees as security experts, although a PC or Mac program certainly wouldn't have helped protect a UNIX system.

Other vendors used the opportunity as a warning to users against downloading possibly virus-infected pirated software from bulletin boards. Although pirated software and virus-infected PC and Mac software are definite problems, they're a different issue from the Internet worm.

## Vendors And Users React

Although the Internet worm itself is stopped, the holes that it exploited, or other similar ones, are still present in operating systems, say experts. And in some cases, vendors don't seem to be in a hurry to fix them.

For example, in the weeks following the Internet worm, a number of users posted messages to the network saying they'd known about the security flaws that the program had exploited. However, although several of the users said they'd reported the problems to vendors—in some cases, months or years previously—the holes were not fixed.

Moreover, the finger and sendmail bugs are just two of many UNIX bugs. "There are normal lists for posting these things, and dozens of them get posted every month," Brand says. He doesn't blame the vendors for not finding the bugs in the first place—"the finger one I never would have found in a hundred years"—but for not fixing them once they're informed.

"The problem is, once it's reported, why don't they fix it?" Brand says. "In some cases there have been cases where we've requested a security fix, and 18 months have gone by and it still hasn't been fixed."

Other users criticize vendors for what they say is

**A number of users posted messages to the network saying they'd known about the security flaws that the worm had exploited. Although several of the users said they'd reported the problems to vendors—in some cases, months or years previously—the holes were not fixed.**

essentially taking UNIX software from the research community that developed it, slapping their own label on it, and then selling it without checking for security holes. For their part, vendors say users don't take advantage of the security methods that are there. "Vendors can supply the locks but we can't force the users to use them," says one.

There's also a movement toward educating programmers against writing worms, viruses, Trojan horses, and other destructive programs, but there's some question about how successful these efforts can be, especially when one can wind up on the front page of the *New York Times*. In addition, while education can work for many people, it's often a case of keeping the honest people honest.

"I believe that 99% of the people can be educated," Brand says. "I also believe that 99% of the people can be educated not to drive drunk, but I wear seat belts because it only takes one person to kill me."

No matter what, it seems that the ultimate burden is going to fall on the system administrator—making sure users choose passwords that aren't ridiculously easy to guess, monitoring the network to look for unauthorized users or unusual activity, checking downloaded software carefully before running it on the system, keeping in touch with other administrators to keep up-to-date on bug fixes, and, when all else fails, keeping a good set of backup tapes with which to restore the system if a cracker does slip through.

Much of the information about the Internet worm itself is drawn from "The Internet Worm Program: An Analysis" by Eugene Spafford at Purdue University. If you would like a copy of this (fairly technical) paper, send a self-addressed stamped 8 1/2" by 11" envelope to Eugene Spafford at the Department of Computer Sciences, Purdue University, West Lafayette, IN 47907-2004. Ask for Purdue Technical Report CSD-TR-823. ■

*Copyright © 1989 by Sharon Fisher. All rights reserved.* *Sharon Fisher is a San Francisco-based freelance writer specializing in computer communications. She can be reached via CompuServe at 76012,1147, via BIX as sharonfisher, or via the Internet as slf@well.uucp.*

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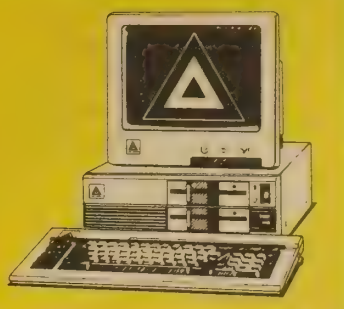

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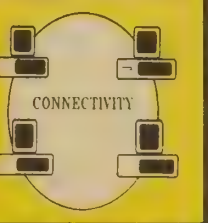


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# A Software Bestiary

## *A Glossary Of Computer Parasites And Remedies, Real And Hypothetical*

**By Corinne Cullen Hawkins**

## Viruses

Viruses, in their simplest form, are programs which simply replicate themselves. A slightly more advanced virus not only duplicates a program but renames each one slightly differently. More sophisticated viruses erase files, scramble memory, turn off the power, or do any/all of these things with a time delay, called a time bomb. Some viruses "burn a hole" somewhere so that a certain command will do something else, i.e., given an addition command the program subtracts instead.

**Creeper**—Possibly the first known virus, first sighted in 1970. Built by Bob Thomas of BBN, it was a demonstration program that crawled through ARPAnet (a nationwide Pentagon-funded network linking university, military, and corporate computers), springing up on computer terminals with the message, "I'm the creeper, catch me if you can!"

A version of Creeper done by Ray Tomlinson not only moved through the net, but also replicated itself at times.

**Reaper**—In response to Creeper, this virus also jumped through the network, but it proceeded to detect and "kill" creepers. (*The Cincinnati Post*, February 1, 1988)

**Rabbit**—One of the first known viruses, first sighted in 1974 by Bill Kennedy. When Rabbit was submitted, it copied itself and continued to toss the copies back into the input jobstream (the place where programs start). This slowed the communication between the ASP input jobstream and its console (teletype where system operator sees what's going on), which made Rabbit harder to kill the longer it ran. (Usenet, comp.risks, Bill Kennedy, March 29, 1988).

**Pervading Animal**—An early proto-virus attached to a Univac 1108 game program called *Animal*. While the user was playing the game, Pervading Animal copied itself into every write enabled program file available. (Mike Van Pelt, comp.risks March 29, 1988.)

**Smart Virus**—In *The Adolescence of P-1* by Thomas J. Ryan (Collier Books, 1977), there is an example of an intelligent, information hunting virus.

**ARPAnet Data Virus**—Peter Neumann calls this one an "accidentally propagating data virus." On October 27, 1980, multiple contaminated node status words propagated and defied garbage collection at each ARPAnet node, thus saturating the nodes—and grinding the network to a halt. Status messages are supposed to propagate, but the garbage collection is also supposed to weed out all but the most recent message from each node, and it failed utterly to do this. It's possible that a freakish hardware malfunction caused a high priority process to run wild, devouring resources needed by other processes and thereby making the network unusable. It's also possible that it was done maliciously, or could be done maliciously. (*Software Engineering Notes*, January, 1981)

**Virus**—first program to be christened a virus, created in 1984 by Fred Cohen.

**2600 VAX Virus**—This one replicates itself, sends jobs continuously to the batch queue (where programs line up, waiting to be run) and sends the output to SYS$SYSTEM (a place peculiar to this type of computer). All that happens is the queue might overflow. (*2600*, August, 1986, vol. 3, number 8.)

**Elk Cloner Virus**—First sighted in 1981 or 1982, this one runs on the Apple II family. It inserts itself into the DOS operating system. It makes every command reset the DOS parse state to 0, but this has no obvious effects. Elk Cloner hooks into the RUN, LOAD, BLOAD, and CATALOG commands to make them check the program disk accessed and infect it. It prints a poem:

The Program with a personality
It will get on all your disks
It will infiltrate your chips
Yes, it's cloner!
It will stick to you like glue
It will modify Ram too
Send in the cloner!

(comp.risks, April 26, 1988 by Phil Goetz)

**Finger Virus**—(From the UNIX command !finger, which provides information on the owner of a particular user ID or on a particular name.) A speculative virus that would go out replicating until it found a specific person. Then it would send that person's e-mail address back to its creator. (Fred Hapgood, First Artificial Life Conference, September, 1987).

**Lehigh Virus**—First sighted November 25, 1987 by Jeffrey Carpenter, posted on Usenet. It attaches itself to a few lines of the operating system used on the IBM PCs that Lehigh University provides for student use. It is a corruption of a legitimate program, Command.Com, the basic boot-up file of MS-DOS and PC-DOS. The virus destroys data on floppies and hard disks by writing zeros to the first 32 sectors of a disk (which erases the directory kept in the first couple of tracks), making the data unrecoverable. It spreads when a clean PC is booted from an infected disk and the user accesses a second uninfected program disk with the resident commands: TYPE, COPY, DIR, CHDIR, ERASE, MKDIR, RMDIR, or VERIFY. The virus waits until it has been copied four times before it wipes out the data on the disk on which it resides.

**(C) Brain Virus**—First sighted fall, 1987 at University of Delaware. It changes the volume label (the given name) of a floppy or hard disk to (C) Brain. The boot record contains a message: "Welcome to the dungeon...Beware of this VIRUS. Contact us for vaccination." The message included an address and phone number of Brain Computer Services, a computer company in Lahore, Pakistan, and the names of two brothers, Basit and Amjad.

The virus marks some disk sectors as bad. It modifies several command files, maybe all of them eventually, without changing file sizes or dates. Even if the boot sector is rewritten, the virus remains active through the command files it modified. No known cure (comp.risks, Dan Roth, April 5, 1988).

This is the first virus to infect an American newspaper's computer system (*The Providence Journal-Bulletin*). When the phone number in Pakistan was called, the person who answered expressed surprise that the virus had traveled so far—and refused to give his last name. (*New York Times*, May 25, 1988).

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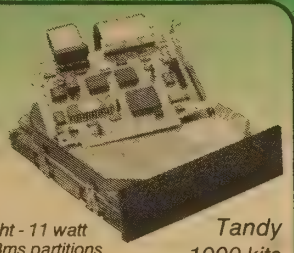
- *Seagate ST238 - 32.7MB/65ms. Half-Height/14.8 watts*

**40MB KIT** $459
- *Seagate ST251 42.8MB - Half- Height - 11 watt*
- *pre formatted into a pair of 21MB/28ms partitions.*

**65MB KIT** $549
- *Seagate ST277R 65.5MB - Half-Height - 11 watts*
- *pre formatted into a pair of 32MB/28ms partitions.*



*Tandy 1000 kits add $20*

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| HH | Seagate ST251-1 | 30ms | 42MB | $449 |
| HH | Toshiba Drive MK134 | 25ms | 44MB | $499 |
| FH | Seagate ST4096 | 28ms | 80MB | $599 |
| FH | Maxtor 1140 | 27ms | 117MB | $1669 |
| FH | Maxtor 2190 | 30ms | 150MB | $1999 |

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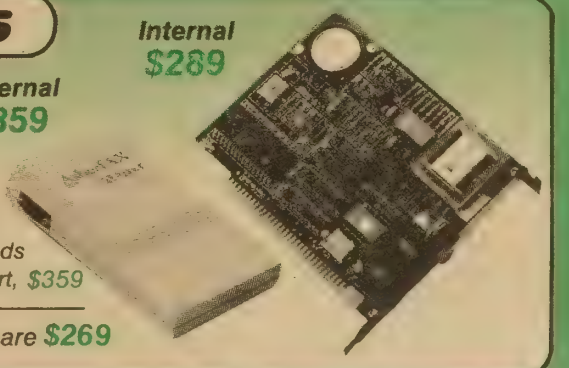

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**with MNP**

| External | Internal |
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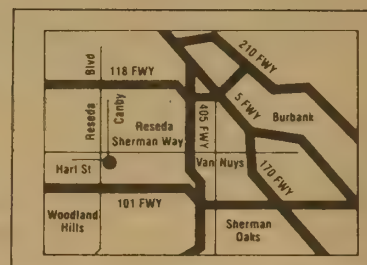


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Samsung CGA w/card

**$333**

Everex EGA w/card

**$548**

Everex Multisync w/card

**$764**

**Amiga Virus**—This one is a simple modification of the Amiga boot block. On an Amiga floppy the boot block consists of the first two sectors on the disk. Normally it contains a small bit of code that loads and initializes the DOS when it is "booted" or turned on. Some commercial software packages and games store special information in the boot block. Since the virus overwrites this, the information is lost forever. After a certain number of disks have been infected the virus will print a message:

"Something wonderful has happened.
Your Amiga is alive!!!
and even better
Some of your disks are infected by a VIRUS
Another masterpiece of the Mega-Mighty SCA"

(comp.risks, Bill Koester, November 13, 1987)

**Israeli Virus**—First sighted by Yuval Rakavy, a student at Hebrew University; first mentioned publicly in *Maariv*, one of Israel's daily newspapers, January 8, 1988. It was designed to begin destroying files on May 13, and to slow computer response on the 13th of any month. It would also put garbage on the screen from time to time. What called attention to the virus was an error in the virus code itself, which caused it to mistake previously infected programs as uninfected. In error, it would add another copy of itself to the program. Some programs were infected as many as four hundred times, and the growth in size of the program was noticeable. This one was discovered before D-day, but it had infected home, university, and military computers before it was detected.

**MacInVirus**— First known encounter by David Spector. This virus was written by a West German and posted to CompuServe in a *HyperCard* stack. The virus is disguised as a resource that inserts itself in a system trap handler (the place where the computer catches errors so they won't cause system crashes). The virus destroys hard disks and the applications that run on them. (comp.risks, January 10, 1988)

**"Good" Virus**—Written by a West German programmer, this virus won't let "unknown" programs run on one's machines. If the programs to be run aren't already infected with *this* virus, they won't be allowed to run at all. (comp.risks, David Spector, January 10,1988)

**Virus Compressor**—First speculated by Fred Cohen, this virus would compress the coding of data, permitting it to be stored in a smaller space. It would ask permission of the user each time it acted. (*New York Times*, January 31, 1988)

**Target Virus**—This one would target a specific program or individual, for example, by systematically altering spreadsheet data, or performing other subtle changes. (*The Cincinnati Post*, February 1, 1988)

**The Anti-Virus Software Virus**—First speculated by Chuck Weinstock, posted to Usenet February 9, 1988. The virus is, of course, embedded in the software you use to detect viruses, and therefore goes undetected.

**Meta-Virus—This is a paranoia virus, created only with words: WARNING! A serious virus is on the loose....By now, it is possible that your system is infected even if you didn't download this program, since you could easily have been infected indirectly. The only safe way to protect yourself against this virus is to print all your files onto paper, erase all the disks on your system, buy fresh software disks from the manufacturer, and type in all your data again. But FIRST! send this message to everyone you know, so that they will also protect themselves.**

**Meta-Virus**—First speculated by Jeffrey Mogul, February 9, 1988 on Usenet. This is a paranoia virus, created only with words:

**WARNING! A serious virus is on the loose. It was hidden in the program called 1987 TAXFORM that was on this bulletin board last year....By now, it is possible that your system is infected even if you didn't download this program, since you could easily have been infected indirectly. The only safe way to protect yourself against this virus is to print all your files onto paper, erase all the disks on your system, buy fresh software disks from the manufacturer, and type in all your data again. But FIRST! send this message to everyone you know, so that they will also protect themselves.**

**This virus took Jeff Mogul two minutes to produce and he didn't even have to write any code. It bears some similarity to the Shoot Yourself In The Foot virus.**

**Scores Virus**—First sighting mentioned in *MacWeek*, April 12, 1988. In existence since at least February, and possibly since as early as September 1987. It infiltrated several government agencies, Apple Sales offices, and the Mac of an unidentified senator, as well as *Macworld* and *Macintosh Today*.

First dissected by John Norstad and Bob Hablutzel, this virus has several time delay features. It's designed to attack two custom applications called ERIC and VULT, but it will infect anything. Several days after infecting a Mac system, the virus attempts to locate and modify any files with the creator code of ERIC or VULT. The code of the virus is written to make the targeted program dysfunctional.

The virus lies dormant for two days after infection. After two, four, and seven days, various parts wake up and begin their mischief. Two days after the initial infection the virus begins to spread to other applications. After four days the second part of the virus wakes up. It begins to watch for the VULT and ERIC applications. Whenever VULT or ERIC is run, the system bombs after 25 minutes' use. After seven days the third part of the virus kicks in. Whenever VULT is run the virus waits 15 minutes, then causes any attempt to write a disk file to bomb. If you don't do any writes for another ten minutes the application will bomb anyway.

Deleting the infected resources isn't enough to remove the virus, since the virus recognizes the attempt and modifies its resource identification and memory location when probed by resource utilities. ResEdit "thinks" that the virus resources have been deleted, but they have been renamed and will return when the Mac is restarted.

Apparently, the virus doesn't attempt to spread itself over networks.

The Scores virus causes printing problems, system crashes, application crashes on launch, and damaged *Excel* files.

**MacMag Virus**—First mentioned in print in a UPI report February 12, 1988. The virus was launched in December 1987 by Richard Brandow, publisher of *MacMag* magazine in Montreal, Canada. It was supposed to be a simple message of peace, designed to pop up on Macintosh screens on March 2, the anniversary of the introduction of the Apple Macintosh SE and Macintosh II. The virus infects the System file, but doesn't directly affect applications. After March 2 the virus erased itself. Although this virus was designed to be benign, it had some nasty side effects: it played havoc with users' System folders, resulting in thousands of hours of lost work.

The virus spread to Europe and the West Coast; it is the first virus to infect a commercially available personal computer product. It was inadvertently passed to Aldus by Marc Canter, president of MacroMind Inc. of Chicago, which makes training disks for Aldus. Mr. Canter's personal machine caught the virus from an infected copy of *Mr. Potato Head*, a computer game. He ran the program only once; it was enough to infect his computer, which was later used to work on a training software disk for Aldus. Aldus admits that a disk-duplicating

machine copied the infected disk for three days. Half of the infected disks were distributed to retailers; the other half were warehoused.

**Bell Labs Virus**—A compiler program (which translates a human programmer's instructions into a set of ones and zeroes that a computer can read) had been altered so that it secretly embedded a hidden "trapdoor" each time it created a new version of the operating system. The secret trapdoor altered the system so that, in addition to normal users' passwords, it would recognize a magic password known only to one person. The instructions never showed up in the program listing—it was undetectable through normal means. The virus never escaped Bell Labs.

**Immortal Virus**—First speculated by Paul Hoffman, March 13, 1988 in the Macintosh Conference on the WELL. This virus would live in some cache-like memory on a serial port or parallel port (which connects a printer to a computer) so it would survive a warm boot, even after a devirusing.

**King Virus**—A virus that kills other viruses and replaces them with itself. First speculated by Andrew Beals, March 16, 1988, on the WELL. No known sightings.

**King II Virus**—A virus that not only kills other viruses, but feeds on them, getting stronger each time. Speculated by Michael Zentner, March 16, 1988, Macintosh Conference on the WELL.

**Atari ST virus**—First dissected March 22, 1988, posted on Usenet March 26, 1988 by Martin Minow. Once installed, this virus will copy itself onto every non-write-protected disk used. It tests an uninfected disk to see if it contains the virus, replicates, then keeps count of how many times the disk is used after that. When a certain limit is reached, the virus writes random data across the root directory (the central directory) and file allocation tables (which contain the bitmap record of unused sectors) for the disk, making it unusable. The virus then removes itself from the damaged disk. The current virus doesn't affect hard disks. This virus may survive a reset. (This is a warm boot—resetting the machine without turning it off.)

**No-name virus**—First rumored to exist March 26, 1988 on Usenet, posted by Martin Minow. This virus is almost impossible to detect because for each disk, it scans for any program file (*.prg) and appends itself to the text segment in some way. This makes it very difficult to tell whether or not the virus is actually on the disk.

## Trojan Horses

These parasites are bits of code slipped into an otherwise innocent program. Viruses replicate; Trojan Horses do not. Some are written from scratch, some are adulterated copies of legitimate programs, such as *PC WRITE*. Some Trojans erase or scramble data, some just scramble or erase the file allocation table (the computer's index of where data are stored on a disk). Some begin destruction within minutes of infection, others perform as legitimate software for weeks or months, then touch off a time bomb.

**Viruses replicate; Trojan Horses do not. Some are written from scratch, some are adulterated copies of legitimate programs. Some Trojans erase or scramble data. Some begin destruction within minutes of infection, others perform as legitimate software for weeks or months, then touch off a time bomb.**

Some Trojans put up a screen message such as: "I'm deleting all your files," then proceed to do so. Some put up a similar screen message, but don't follow through. The more sophisticated Trojan Horses delete themselves with their last line of programming. In other cases the Trojan isn't actually inserted directly into the program. Only a pointer is placed in the program, telling the system which program to run, and the horse is hidden elsewhere.

**Notroj**—This Trojan Horse pretends to be a program that guards against Trojans. It's actually a time bomb that wipes out the hard disk after it's more than 70% full. (*New York Times*, May 19, 1987)

**XmasCard Trojan**—First known sighting was on Wednesday, December 9, 1987; it was written as a prank by a West German student. This Trojan began in a European academic computer network (Bitnet) and jumped through electronic gateways to five continents and to the internal email system of IBM. In the IBM internal email system, a holiday message promised to draw a Christmas tree on the screen if someone would type the word "Christmas" on the computer. When they did, it drew a tree but it also sent a copy of itself to all of the other network mail addresses kept in each user's electronic rolodex. Along with a very primitive tree (made of capital Xes), a message was displayed: "A very happy Christmas and my best wishes for the next year. Let this run and enjoy yourself. Browsing this file is no fun at all. Just type Christmas."

Once opened, the program rarely accepted commands to stop. Operators who turned off their terminals to try to stop the Christmas message lost electronic mail or unfinished reports not saved in the computer. The Trojan infected so many machines that it brought IBM's global electronic mail network to a halt, disrupting the system for 72 hours. Plant officials were forced to turn off internal links between computer terminals and mainframe systems to purge the message.

A virus was written to follow and destroy the XmasCard Trojan and then self-destruct in mid-January. The Trojan was generally stamped out by Monday, December 14, 1987. The culprit was tracked down and barred from access to his system.

**Turkey Trojan**—A program being passed around via ARPAnet and some other computer networks, called "Turkey." It's supposed to draw a picture of a turkey, but it doesn't. Instead, it erases all of the unprotected files in the directory. (comp.risks May 12, 1988)

**Run.me**—This is a graphics program which plays "The Star-Spangled Banner" and displays the American flag while it worms its way into the hard disk and erases the data on it. (*New York Times*, May 19, 1987)

## Worms

Essentially, worms are simple creatures: memory crunchers who rewrite themselves successively through the computer's memory. The programs on individual computers are the segments, which remain in communication with each other. Almost any program can be modified to incorporate the worm mechanism.

**Xerox PARC Worm**—In 1980, John Shoch at the Xerox Palo Alto Research Center devised a worm which wriggled through large computer systems looking for machines that were not being used and harnessing them to help solve a large problem. It could take over an entire system. (John F. Shoch and Jon A. Hupp, September, 1980, Xerox Palo Alto Research Center)

**Existential worm**—A worm whose sole purpose is to stay alive. It runs no substantive application program. The Cookie Monster Worm at MIT was one such—it displayed a screen which said: "I'm the Cookie Monster, catch me if you can!"

**Billboard worm**—A worm used to distribute a full-size graphics image to many different machines. Some have graphics of the worm nibbling up the screen and heading off into memory. (John Shoch, 1980)

**Alarm Clock worm**—A worm that reaches out through the network to an out-going terminal (one equipped with a modem), and places wake-up calls to a list of users. (John Shoch, 1980)

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**Gladiator worms**—Bill Buckley and James Hauser developed Core Wars, where the object is to write a worm program that can replicate itself faster than another worm program can eat it. The one alive at the end wins. Some of the winning programs have a chromosome consisting of only four lines of code. Longer genes can't execute as fast as short ones, so they tend to get weeded out. (*Whole Earth Review* #58)

**Shockwave Rider Worm**—Still the most sophisticated worm is the fictional one created by writer John Brunner in his novel *The Shockwave Rider*, which apparently was a major influence on Robert Morris Jr. Brunner's tapeworm ran loose through a computer network, gobbling up computer memory in order to duplicate itself—there was no stopping it. The worms were used by rebels to undermine a dictatorial government wielding power through a computer network:

And–no, it can't be killed. It's definitely self-perpetuating so long as the net exists. Even if one segment of it is inactivated, a counterpart of the missing portion will remain in store at some other station and the worm will automatically subdivide and send a duplicate head to collect the spare groups and restore them to their place." (John Brunner, *The Shockwave Rider*, Ballantine, 1975)

**Worm watcher**—A special program which automatically takes steps to limit the size of a worm, or shut it down if it grows beyond a certain limit. The worm watcher also maintains a running log recording changes in the state of individual segments. This information can be used to analyze what might have gone wrong with a worm. (John Shoch, 1980)

**Worms are simple creatures: memory crunchers that rewrite themselves successively through the computer's memory. Almost any program can be modified to incorporate the worm mechanism.**

it can be used to see if the size of the program changes.

**Ferret**—Created by Larry Nedry and Scott Winders. Notifies an infected user of the date that the Scores virus installed itself. It's helpful in determining where/how the virus was picked up. *Ferret* is available on electronic bulletin boards such as CompuServe and MacNET. (*MacWeek*, April 26, 1988)

**KillScores**—Unlocks locked files, disinfects, and leaves files unlocked. (comp.risks May 11, 1988)

**Vaccine**—By Don Brown at CE Software, Inc., March 19,1988. It enables your computer's operating system to detect alterations to the code of your system files and applications. It requires your permission for any such alterations. If your system is already infected when you install *Vaccine*, there will be no warning from *Vaccine* that the virus exists. If *Vaccine* is installed on a sterile system and the Scores virus is introduced later, *Vaccine* will only warn of the virus attack; it will not prevent infection. *Vaccine* is available free on electronic bulletin boards such as CompuServe and GEnie.

**Interferon**—Written by Robert Woodhead. A shareware program that detects and claims to recognize "signals" that viruses give off when they are present, *Interferon* was intended to complement the *Vaccine* program from CE Software of Des Moines, Iowa. *Interferon* is available on electronic bulletin boards. (Woodhead is also the author of the commercial package *Virex*, published by HJC Software, P.O. Box 51816, Durham, NC 27717)

**Softlog**—(Asky, Inc., Milpitas, CA. Licensed to corporations in lots of one hundred units for $2,400.) Matches the current size of computer files against their previous size, and thus detects any unauthorized additional material.

**Truss**—For UNIX systems; it allows the system administrator to examine any process and observe the activities of any user logging in from a remote site. *Truss* attaches to a login shell (the part of the computer that handles the commands a user needs to log in to the bulletin board). *Truss* can also freeze a process and allow a debugger more detailed information about the errant process.

**Data Physician**—The grandaddy of virus remedies, on the market for three years. ($199.00 from Digital Dispatch, 1580 Rice Creek Road, Minneapolis, MN 55432; 612/571-7400) It detects and in some cases eliminates viruses. Makes careful measurements of a computer's programs and data files to detect any alien computer codes. It includes:

Data MD—One portion of *Data Physician*, which creates a list of computer data files to be protected and watches them while the computer is in operation.

Antigen—Attaches itself to an individual computer program and checks it for viruses each time it's used. To remove a virus, Antigen erases the bytes of computer data that weren't in the program earlier.

Padlock—Prevents anything from being written on a storage disk unless the computer operator pushes a button to give permission.

*Data Physician* works on IBM PC and UNIX systems.

**Disk Defender**—(mail orders: $199.00, Elek-tek, 6557 N. Lincoln Ave., Chicago, IL 60645; 800/621-1269) Director Technologies, Inc. developed this product, which write protects in hardware all or part of a personal computer's hard disk. This protects the operating system and commonly used programs from viruses.

**Virus Rx**—Developed by Apple (but sold through local dealers), this is a detection tool to determine whether a system has been infected by the Scores virus, and if so, which applications have been affected. It lists damaged applications, invisible files, altered system files, and altered applications. *Virus Rx* reports different levels of concern from simple comments to "dangerous," to "fatal." It first lists damaged applications–those that have not been infected by the virus, but will not work and should probably be removed. This program is available through Apple dealers, AppleLink, and through some user group bulletin boards.

**Forgery Detector**—Designers are now working on software that analyzes a program's style, in a similar fashion to handwriting analysis. It can then detect when "foreign" code is added to a particular program. It may also be able to determine the author of a virus. (*The Cincinnati Post*, February 1, 1988)

**Pirate Detector Virus**—This one keeps track of software duplication. It tells you how many copies of a program have been made, and alert you to illegal or viral program duplication. (*New York Times*, January 31, 1988) ■

## Virus Remedies

As viruses have proliferated, so have vaccines and other remedies.

**Viralarm System** (Lasertrieve Inc., of Metuchen, NJ 201/906-1901)—consists of a special program to protect another program, creating a software barrier. The protection is available for individual personal computers and works for most operating systems now available.

**Protec** ($195.00 from Sophco. Inc., PO Box 7430, Boulder, CO 80306-7430; 800/922-3001) A system of programs that includes Vaccinate—a virus itself, which infects the host via the *Syringe* program. It warns the end user (the person using the program as opposed to the one who wrote it) if a virus infection has occurred. It also includes Canary, a quarantine program. When new files are imported from an unknown source, a user places the Canary program on a diskette with the suspect files. If the Canary dies, a virus program is present. *Protec* works on the IBM-PC family of computers.

**Checksum**—Commonly attached to the end of a program. Although not designed as a virus catcher,

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computer viruses a special report

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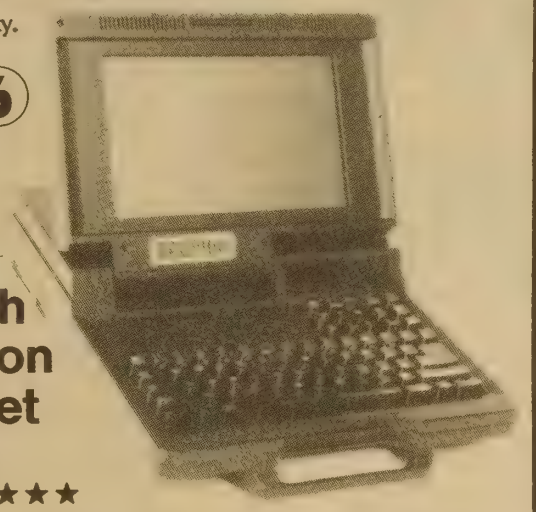

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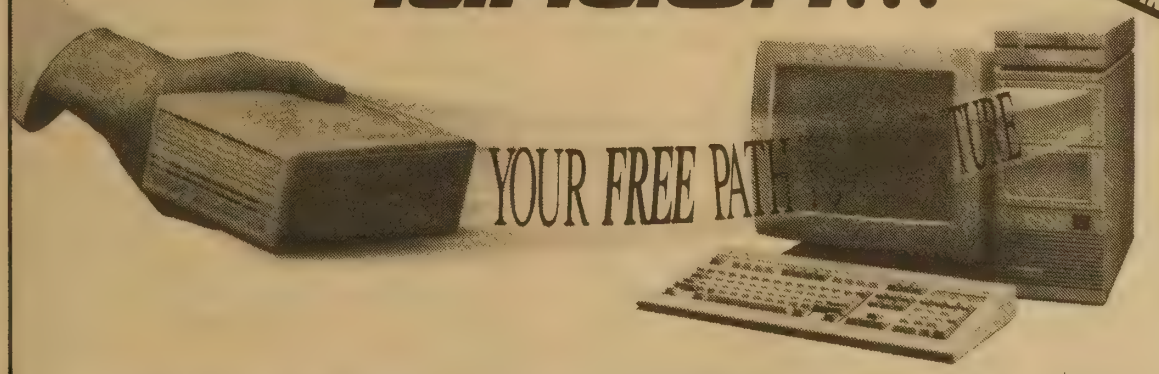


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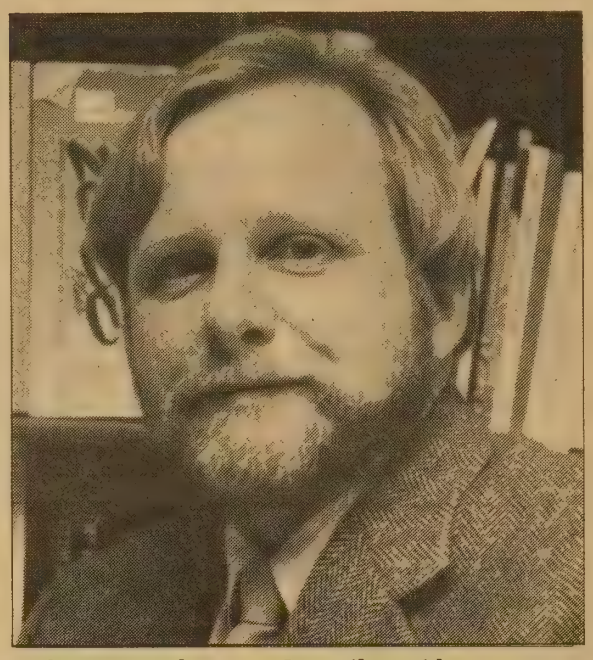
# Viruses And The Software Industry

## *Anti-virus pioneer Michael Odawa on what developers can do to protect themselves and their customers*

### By Tony Rocco

Michael Odawa is president of the Software Development Council, an affiliation of local software trade associations. Considered alarmist by some and visionary by others, Odawa is attempting to help marshal the forces of the microcomputer software industry to eliminate the virus threat. Odawa's view is that viruses are an extremely serious matter, with potentially life-threatening implicatons. They're likely to become more of a problem as we become more dependent on computers, and viruses become more destructive and prevalent. Odawa, a veteran programmer himself, believes that a united software industry following the proper strategy, and specific laws making the release of a virus—any virus, "benign" or otherwise—strictly illegal, can defeat the increasingly serious virus threat. In this *MicroTimes* interview, Odawa discusses the SDC, the spread of computer bugs, and strategies he feels can successfully eliminate computer viruses.



**Software Development Council president Michael Odawa: "In order to get rid of viruses entirely we have to make a whole new generation of software that is resistant to viruses. And that, essentially, is the strategy of the SDC."**

**For those who have never heard of the Software Development Council, what is it exactly?**

It is a confederation of six local software developers associations including SEF (Software Entrepreneurs' Forum) here in the Bay Area. We formed the council for the purpose of strengthening our local associations and providing communication between them. And for representing a voice of software development where it had to be represented. That particularly refers to the virus issue, which we've been active on since the very beginning. We formed as an official council only last May. So it's only been seven or eight months or so.

**Where are we right now in the fight against computer viruses?**

At the very, very beginning. People are still releasing these damn things.

**We don't know how to fight them?**

Well, we're learning real quick. There's a whole lot to learn. There are two things to worry about. There are the viruses that are already in circulation. You can clean off your hard disk, disinfect everything, and tomorrow catch another virus. These things are going to circulate over and over, we're not going to stamp them out. At least not for a long, long time. The other problem is future and potential viruses.

I don't think the word has gotten out to people how serious viruses are. I think there still are some nitwits running around who don't understand how serious these are. Well, like this guy who released the worm in ARPAnet. From what I hear he seems like a really decent human being, but the guy just doesn't have any brains at all.

**Does anyone know why he did it?**

Some people have suggested it was to tell people about holes in security. That's an incredibly naive motivation. There's all sorts of holes in security. You can spend the rest of your life telling people about holes in security. There's no big deal that there's a hole in security. Particularly in UNIX. The security in UNIX is like Swiss cheese. There's no security at all. It was not intended to be a secure system.

**What are some theoretical strategies for defeating viruses?**

There's a couple of things, a couple of levels. You can take a number of measures to avoid viruses. And one of them is to run something like *Vaccine*.

**How effective are Vaccine and other similar programs?**

Moderately so. It will be effective until somebody writes a virus that defeats it. I don't know how far this medical analogy goes, but as you use more medicines, you develop strains of disease that can resist them. Likewise, as you use things like *Vaccine* and other programs, then potentially viruses get written that can defeat them. As long as you've got people with the motivation and stupidity to write viruses, you've got an almost infinite supply of them.

**So, you're not hopeful of finding a software solution to defeating viruses?**

In order to get rid of viruses entirely we have to make a whole new generation of software that is resistant to viruses. And that, essentially, is the strategy of the SDC. It's sort of innovative, in a sense. Most people look at the fact that you can have this infinite escalation of vaccine resistant viruses. They just get grossed out by the fact that there's no winning an arms race.

We've taken a different look at it and we say that there's something else that's necessary for a virus to succeed, and that is propagation. A virus has to travel. It has to jump from one program to another. The only way it can do that is if it can successfully grab a hold of a program and travel with that program. So what we're developing is programs that can't be grabbed a hold of.

The way we're developing programs that can't be grabbed a hold of is that programs with this strategy will check themselves over before they run. It's like getting up in the morning and you count your arms and your legs. Are my parts here? Yeah, everything's here. Is there anything clinging to my body that doesn't belong there? That's what our software will do. It will check around and will see whether not anything is clinging to it. And if anything is clinging to it that doesn't belong there, it will notify the user. That way, we hope to cut down on the propagation.

What we have today, because this problem is fairly recent, is an environment that is conducive to viruses. And we just want to make the environment not conducive to viral communication.

**Will applications be able to rid themselves of the viruses?**

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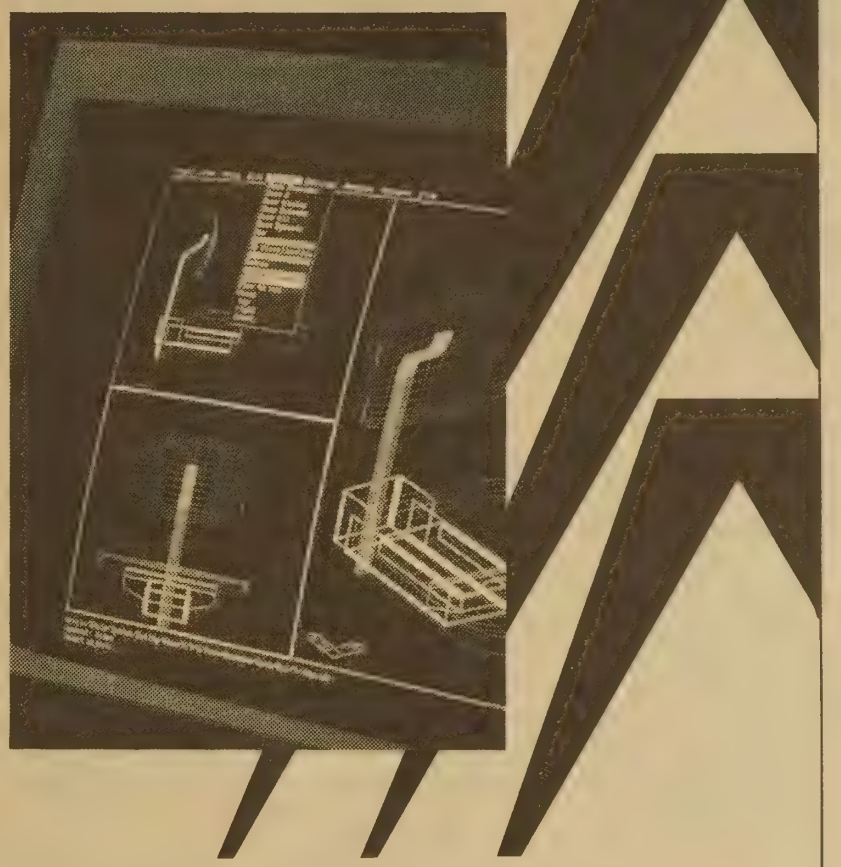

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You'll have to have some sort of medicine software that runs through your hard disk and gets all the viruses. Chances are, if one application is infected, they all are, or most of them are. Like the nVIR virus. It propagates by leaving nVIR resources in all the applications. So what this medicine software has to do is go into all the applications and take out the nVIR resources. I know of several companies that are developing software along those lines, that will do the clean up work.

**What are the chances of a virus coming along that can elude detection by an application designed to check itself out?**

It's theoretically possible. But what we're doing has another twist to it. We're not using the same method on every application. As a matter of fact, every application will use a different method. So you can come out with a virus that might affect one program but not others. That will cut down its ability to propagate very seriously. Let's say a virus can infect the program XYZ but no other programs. OK, it will infect XYZ. But it won't go very far very fast.

The other thing is, if it infects XYZ, once you run program ABC, ABC is going to notice that it's there and tell you about it. So you'll get protected. Even though you might theoretically get by a single application, because everybody runs three or four applications or more, and they'll all be using different methods to check, one of them is going to find it.

We can come up with a pretty good means of defeating viruses that way but no means of defeating viruses that is absolutely foolproof. Because of that we have another tactic that we're using. We are actively trying to publicize among programmers what are the negative aspects of viruses; how there is no virus that is benign, there's no virus that's really a message of peace. There is no such thing as a virus that's a message of brotherhood.

**How far away are we from seeing applications that are virus resistant?**

Virus resistant applications will be on the market the first or second quarter of '89. We may not publicize the fact that they're virus resistant.

**There won't be some message in big letters on the box?**

We haven't decided about that. There are arguments pro and con. It will provide a challenge to the SOBs that write viruses (to let them know the application is virus resistant).

**They'll find out eventually, though.**

This is a group decision thing. We've debated it back and forth and haven't come up with an answer. Chances are we're all going to come up with an answer. Either we're all going to advertise it or we're not going to advertise it.

**Have there been problems in getting the cooperation of people in the software industry in fighting viruses?**

Believe it or not, there are still people in this industry who don't realize how serious this thing is. There really are. I know it's serious because I talk to users all the time. Users are real serious about viruses. People in the industry tend to be more computer knowledgeable and they say, "Well, it's a pain in the butt, but it's not a very serious thing." Frequently, I'll call someone up one week and they'll say, "Well, viruses, they're not very serious." And then the next week they'll call *me* up and say, "We changed our mind, viruses are real serious. We got hit with one." (Laughs.) They're never real serious until they hit you and then suddenly you begin to see how important they are. This is an epidemic. It's real serious.

Another problem is that a lot of people don't understand that there's something they can do about it. A lot of people in the industry don't understand that there is a reasonable technological approach to take. They look at the fact that you have this infinite escalation and they freak out and say there's nothing you can do about it.

Substantial people in the industry, people whose names would really impress you, really, in private, freak out about viruses. Yet in public they're trying to downplay it because they don't want to panic anybody. But, frankly, they don't know what to do about it. My job is to get word to them that we have a solution. So part of the challenge is to get the word out to other people in the industry that there is a way to fight viruses.

**Is it overly optimistic to think, then, that if we implement a few simple strategies, in another year or two we won't even be talking about viruses anymore?**

If what we're doing is successful, maybe a couple of years from now we will have done away with the problem of viruses. I sure hope so. I think it's going to take action on two or three fronts. One is the technological solution. The other is the political solution.

**You've gone on record saying, "Release a virus, go to jail." What laws and penalties would you like to see?**

There are some state criminal laws regarding unauthorized access to other people's computers that could be used by a very aggressive prosecutor to put somebody in jail. We don't think that's sufficient. We think that there should be a statute very specifically singling out viruses, saying if you release a virus there are going to be criminal penalties.

Most statutes have focused on the specific damage that's been done. I think that even something like the Peace virus should have a criminal penalty. Even though you can't say that a certain amount of files were damaged, the fact is that releasing a virus by itself is creating an epidemic. Even if a person is too stupid or naive to understand the consequences, it's a malicious act that should be singled out.

**Is the SDC lobbying to get these laws written and passed?**

Yes. On the state and national levels.

**How severe do you want to see the penalties? Why shouldn't they be tied to the amount of harm caused?**

We use computers in medical applications, we use computers to monitor people's heart beats. Viruses can kill. When you go through the act of releasing a virus, you have absolutely no idea how much damage you're going to cause. It could be a lot or it could be very little. It's the act of releasing the virus that has the maliciousness, the damage it has is purely an effect of chance.

For instance, take the MacMag virus. Everybody says, "Oh, what a benign virus." One of the things the MacMag virus did is it added extra cycles to the computer, to the program that it sandwiched on. It ran on the system file and each time the computer was run, it consumed extra compute cycles. When you write real-time software that is used in medical applications, let's say to monitor people's heart beats, timing is very, very critical. People who write this software actually count compute cycles. If a virus gets in there and adds compute cycles, it can screw up a whole real-time application.

Again, releasing a virus is real, real serious even if you have no intention of causing someone's death. You also have no way of knowing whether that virus will result eventually in someone's death. Anybody who releases any virus should spend some time in jail.

**How have legislators been responding to this? Have they been receptive?**

It makes sense to them. We're real hopeful that a consensus will be reached.

**Until these legal and technological strategies are implemented, what can you tell people to do right now to protect against viral infection?**

Everybody should have something like *Vaccine*. Use it all the time. I wouldn't advise that you protect yourself by just buying shrink wrapped software. Frankly, some of the best software I have I downloaded from the WELL. I'm a big believer in shareware and public domain software. We think it's inappropriate to scare people into using just shrink wrapped software. People who do shareware have known methods to fight viruses. I've downloaded an awful lot of stuff, and run a lot of programs and I've never caught a virus that way.

Run some antiviral program and use it all the time. Pay attention to the specific virus that each product protects against and have enough products around that you can protect yourself against a variety of viruses. Another thing is to keep your files backed up and your master copies of every program in a safe place.

Be prepared that despite your best efforts you may become infected. Be prepared to wipe off your hard disk. Be prepared for the worst. We haven't won this fight yet. (Software Development Council of North America, P.O. Box 61031, Palo Alto, CA 94306, 415/854-7219.) ■

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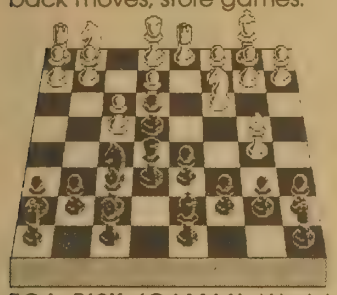

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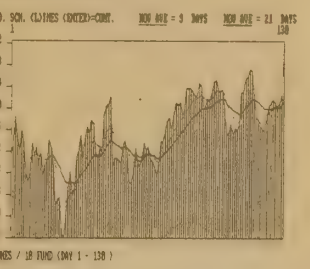

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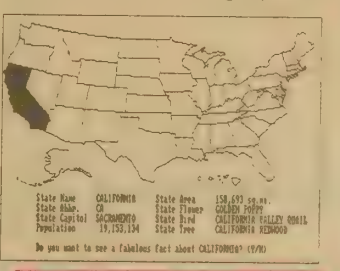
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# Viruses: The Long View

## By Birrell Walsh

There was Dan Rather, talking about the DARPAnet virus on the CBS evening news. It didn't take long for a computer specialists' in-joke to become a national story.

Most of the media tend to handle such stories in one of two ways.

Some will say "Hackers Tangle Networks: Isn't It Cute?" The thrust being that since no one likes computers, it's just as well to have some modern Luddites mucking about. Or they will say "Terrorist Hackers Tangle Networks; World Will Soon End." This is more like our sense of the matter: one really good virus, well-placed, could eat its way through a whole financial system. Or a military system. It would not take too many of viruses before the whole computerized West would grind to a halt.

There are other ways to think about viruses. Since we work with computers, it falls to us to find those long-term views (if only to entertain people over coffee or cocktails). I think that we could defend four ideas, each more outrageous than its predecessor:

- Viruses will sell "object oriented" programming.
- Some viruses will be useful.
- Viruses will *not* be defeated, but the effort will educate us.
- The oddest speculation: Computer viruses really are a form of life, and this era will be remembered for their appearance.

### "Viruses Will Hasten The Conversion To Object-Oriented Programming"

"Object-oriented" systems are those that use the metaphor of objects which communicate with each other. This is opposed to most languages' metaphor of a single servant (the processor) which gets meticulous instructions (the program) and then carries them out, line by line.

Computers don't care whether they have an object-oriented system resident in them or not. Humans like the metaphor because it is easier to think of interacting objects than one massive set of instructions. Since humans are "the environment" to computers, the way we think and what we like are what computer systems must serve in order to survive.

Object-oriented systems treat all incoming data as messages to be responded to or not. The objects' own internal processes are hidden, and they reveal information only to someone who has the correct password—a message for which they have a "handler," in the jargon. That "someone" is not necessarily a human, but may be any other process in the system. No one can obtain the cooperation of another object unless they send the correct message. That means object-oriented processes are already equipped with a sort of filter—or immune system—to reject entry.

**If chemical viruses are "life" because they are self-replicating systems, then what else can we call computer viruses?**

System managers will hear that with glee. They were already leaning toward object-oriented languages because of their conceptual simplicity. As isolation and separation become key issues, they will quickly turn to languages which already have separate, "defensible" data and program structures.

### "Viruses May Be Beneficial As Well As Harmful"

Viruses in nature and viruses in computers have ominous reputations. An infected organism is generally turned to the service of the virus, and its own purposes are subverted. A cell which is taken over by a virus and eventually burst by its progeny is doomed.

Some viruses have taken a milder route to survival. Instead of destroying the cell they invade, they simply become part of it. They are reproduced by the cell when the cell reproduces itself. They do not take over the mechanism entirely and reproduce wildly. Instead, they coexist.

A number of those who have written computer viruses have used them for friendly message passing. A virus that was distributed with a few copies of Aldus *FreeHand* flashed a peace message on March 2, 1988. The message was harmless—beneficial, even—except for the cold chill it gave the people at Aldus when they thought about someone invading their software.

There are other kinds of benefit possible. Organic viruses can carry necessary genetic information to the cells they infect. One early experiment with the (biological) "T-2 phage" virus demonstrated the viral transport of useful genes. Some bacteria were unable to survive for lack of one gene. Viruses carried the needed genetic material through a ceramic filter and "infected" the cells at the other end with the needed gene. Thereafter the bacteria were able to survive and reproduce.

Some years ago, Swedish radio amateurs at Linkøping University designed an intelligent packet system. "Packet" systems break a message into chunks, each of which has an address on it. The message units can be sent by different routes (through repeaters which use the addresses to forward the packets) and reassembled at the receiving point. Utilizing the Forth computer language, the Swedes designed a system in which the packets carried more than data and an address. Each packet had a data segment at the end. At the head was a Forth program, not a simple destination code. Each repeating station treated the incoming packets as programs to be executed. In many cases the packet did what viruses do: the instructions said, "Make many copies of me and distribute them." Other programs were more complex. But the packet system used the virus model (under another name—the word virus was not common then) for beneficial purposes that were not possible otherwise (See *Forth Dimensions*, January/February 1985. You can contact a Forth Interest Group through the "User Group Network" in *MicroTimes*).

What could beneficial viruses do in a computer system? Will we soon see updates for programs distributed by virus? All you will have to do is run the "Update.com" file that is on some network of

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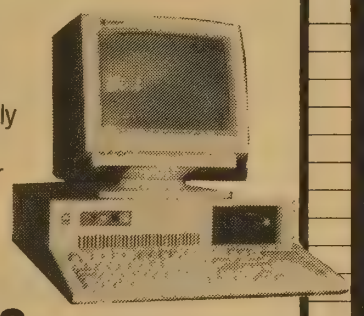

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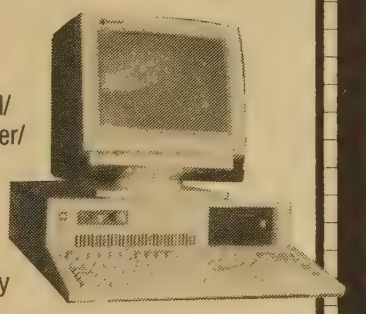

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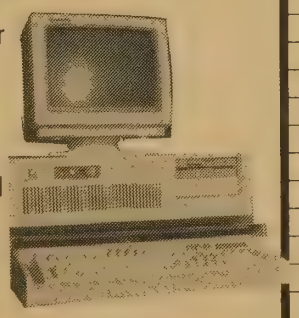

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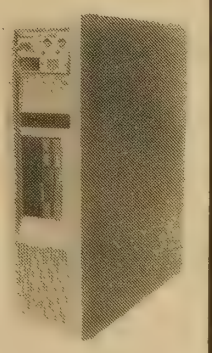

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the future, and applications will be brought up to the current version.

Another application would be in the prevention of viruses. There are virus-preventing programs on the market already called "vaccines." What better way to distribute them than by virus? Because the distributor is itself a virus, it will be rejected by operating systems which have a vaccine. The only systems to take up the vaccine will be those that do not already have it.

As Nancy Grant points out, computer viruses may serve us by providing a model for organic viruses. In investigating that which infects machines, we may learn how to vanquish that which infects us.

## "No One Will Ultimately Defeat Viruses, But The Attempt Will Increase Knowledge"

Our own immune systems develop from the struggle against attempted invasion. In the intellectual struggle against organic viruses we have increased our knowledge of molecular genetics. We have learned how cells do and do not work to a degree we would never have achieved without the desperate need to conquer viruses. Viruses cannot be understood at all without understanding how the cell works at its most intimate levels.

Computer viruses are having the same effect. Few of us thought about the date and size of files until we read that crude viruses often change one or both of those characteristics. And as our awareness is raised, the awareness of the virus-combatters is

**What could be as important as the emergence of a whole new kind of being? Our descendants may remember this as the age when software came to life.**

raised even more—and so is the skill of the virus-creators.

To have a final victory against viruses you would have to have a system that did not respond to external messages. The computer would be defended—and useless. Useful systems will continue to admit messages from the outside. Some communications will be viruses. And some of those will succeed.

The battle against viruses so far has had a paradoxical effect: the viruses are stronger, and people who never thought of the matter have started designing them. This kind of arms-race is reminiscent of the "You can't break into my system"—"Oh, yes I can!" battle of the flu virus and vaccine developers. The best designers in the business work on each side. You get rapid technical progress—and no final victory.

## "Computer Viruses: The First Occurrence Of Non-Organic Life"

The degree of complexity and independence of computers will increase. In fact (by prediction 3), the complexity will speed up *because* of the appearance of viruses. The struggle between virus-makers and those who try to defeat them will result in larger and more sophisticated programs. These programs are not the life in computers, however. They are simply the rich soup in which that life moves.

Complexity in the environment is a precondition of life, but not sufficient in itself. One other thing is needed. To quote from Richard Dawkins' beautiful book on evolution, *The Blind Watchmaker*:

> *Ezekiel called upon the four winds to put living breath into the dry bones. What is the vital ingredient that a dead planet like the early Earth must have, if it is to have a chance of eventually coming alive, as our planet did? It is not breath, not wind, not any kind of elixir or potion. It is not a substance at all, it is a property, the property of self-replication. This is the basic ingredient of cumulative selection. There must somehow, as a consequence of the ordinary laws of physics, come into being self-copying entities, or as I shall call them, replicators. In modern life this role is filled, almost entirely, by DNA molecules, but anything of which copies are made would do...*
>
> *Each replicator, then, has copies of itself made. Each copy is the same as the original, and has the same properties as the original. Among these properties, of course, is the property of making (sometimes with errors) more copies of itself.*

Replication is the critical condition which has finally been met by computer programs. In viruses we have programs that reproduce and distribute themselves. Organic and computer viruses both depend for their success upon the "hijacking" of complex working machines. If chemical viruses are "life" because they are self-replicating systems, then what else can we call computer viruses?

Can life be in mere silicon? Legend says that that was Satan's protest to God—How can spirit be in mere hydrocarbon? We could make a similar denial and say "It can't be alive *because* it's taking place in sand instead of an organic soup." That would be begging the question.

We are in a situation like that of Einstein. Einstein noted the many similarities between the force of gravity and the force of acceleration. He postulated a closed room, and an observer inside it. He concluded that an observer confined to that room (unable to see if there is a planet or a rocket outside) would not be able to distinguish between a room experiencing a 1-G gravity acceleration and a room being accelerated on top of a rocket. Einstein formulated the indistinguishability as an Equivalence

**We can make a telling analogy here: Imagine an observer, to whom the behavior of biological and computer viruses is described without any way to know if the creature is molecular or electronic. "It takes over a system and forces that system to make multiple copies of itself and distribute them," and so on. Will the observer be able to say whether the virus described is biological or not? I would say, "No."**

Principle: "We...will therefore in the following assume the complete physical equivalence of a gravitational field and of a corresponding acceleration of the reference system." (quoted in *Gravitation* by Misner, Thorne & Wheeler).

We can make a telling analogy here: Imagine an observer, to whom the behavior of biological and computer viruses is described without any way to know if the creature is molecular or electronic. "It takes over a system and forces that system to make multiple copies of itself and distribute them," and so on. Will the observer be able to say whether the virus described is biological or not? I would say, "No." The virus in the computer is (at least formally) indistinguishable from the living, organic virus. We can make an equivalence principle that identifies self-replicating systems, whatever their medium. A virus is a virus is a virus.

Computer viruses are frail, vulnerable to detection and vaccine, but they are reproducing in systems far from their "home." They have gone wild, like the first few self-reproducing organic molecules. What could be as important as the emergence of a whole new kind of being? Our descendants may remember this as the age when software came to life. ■

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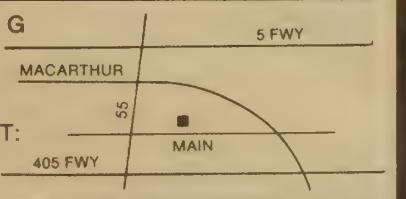


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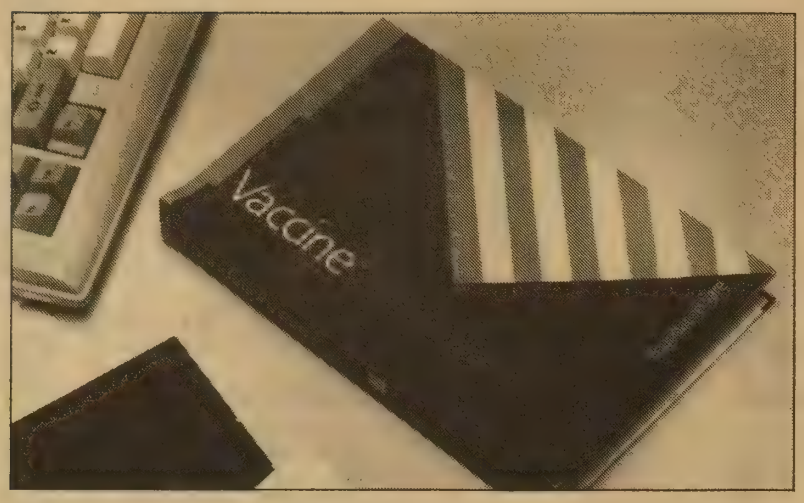


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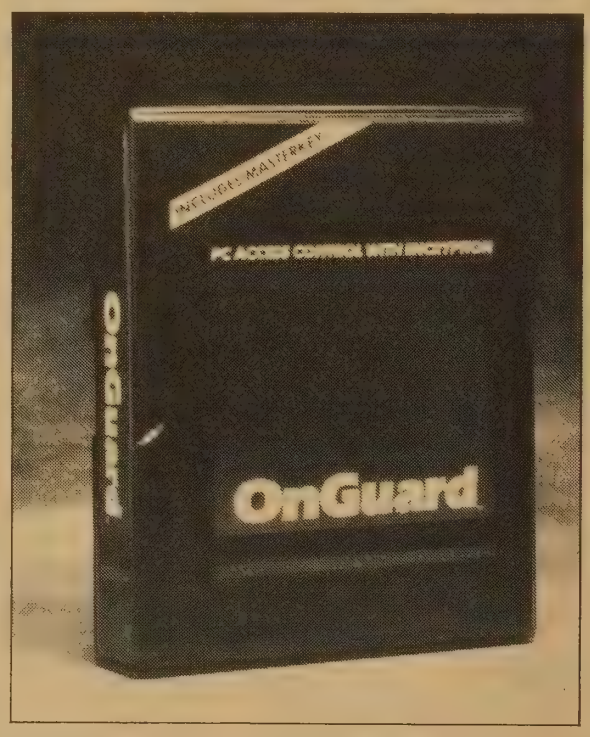
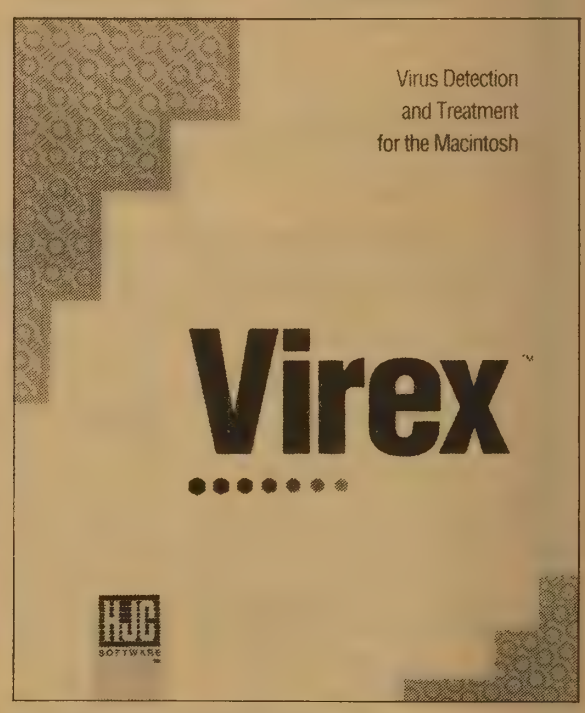



*OnGuard* prevents C drive access through the A drive, provides optional file and directory passwords, tracks authorized and unauthorized access, and can overwrite a file with zeros before deleting it. ($295) United Software Security, Inc., 8133 Leesburg Pike, Vienna, VA 22180. (703)556-0007.

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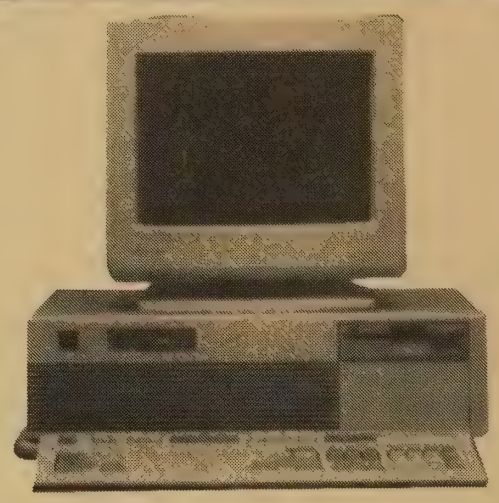

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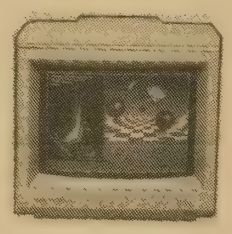

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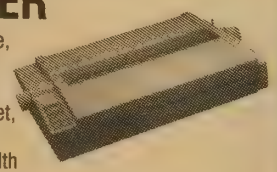

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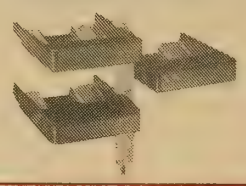

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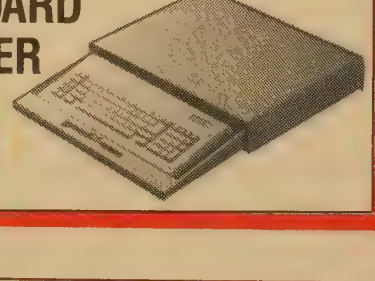

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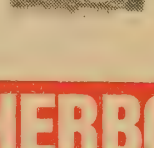

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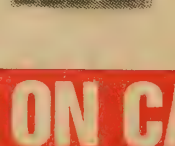

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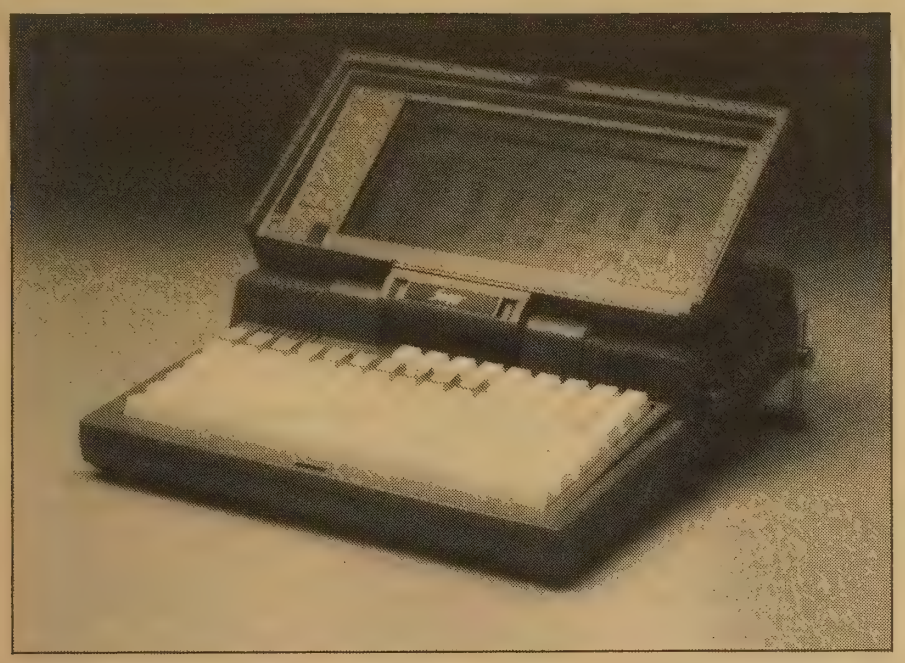
# Datavue's Snap 1+1

## *The Modular Approach To Laptops*

**By Ed Kahn**



**Datavue has beaten the competition to the punch with this design, as the wave of the future seems to be extremely lightweight machines with lots of internal memory and no drives.**

When the first laptops appeared on the market years ago, I thought they worked best as modules of desktop machines. Now Datavue has introduced the first laptop computer that is itself made up of modules. Weighing in at 10 pounds, the Snap 1+1 consists of two parts that can work together or be separated. A five-pound front module consists of a keyboard, 640,K memory, a RAM disk, ports, and a screen. This can be used in the field much like the earliest diskless laptops. The remaining portion of the computer, holding the disk drives and an IBM compatible half-card slot, can be left behind.

The modular makeup of the computer is carried still further. Three displays are available: a standard super-twisted LCD, a backlit super-twisted LCD, and an amber gaslight super-twisted LCD. These displays, each tailored for particular applications, are easily interchanged by the end user by simply unplugging one and replacing it with another. Likewise, other options are also available in modular units that can be installed by the user.

The most unusual feature of the back module is the presence of a half-card slot which allows the user to use any of the options available on the cards. Datavue offers a good selection, but any card that fits will work. For users who want to use this as their only computer but require EGA graphics, an EGA graphics adapter card can be installed into the slot. When the computer is attached to an EGA monitor it will provide a high resolution color display. Similarly, a VGA card can be installed. This is the only laptop computer I know of in this price range that will show high resolution graphics on an external monitor without forcing you to buy an expensive expansion box. Monitors can be left in permanent locations and the Snap 1+1 can be easily moved back and forth. When in the field or on the road, the LCD display is more than adequate.

The expansion possibilities of this computer are not limited to the slot. The front portion of the computer has room for an internal modem ($325) which is easily installed by the user. This 1200 baud package is pretty standard. If you are using either the four-pound module or the full unit, the modem will allow you to communicate with other computers. In addition, Datavue has two fax units available for the Snap 1+1. If you have not used the expansion slot for some other purpose, it is possible to install a half-card fax unit ($395) in order to send and receive fax transmissions through your computer. There are a number of these cards on the market these days, but no other portable computer in this class has the required slot. In addition, the company has also released an external fax unit ($495) which can be used with this or any other computer that has an available serial port. Both of these portable fax machines are class III compatible, which means they meet the standards of the majority of newer fax units on the market. Thus, a user can easily install an internal modem as well as an internal fax card and have a laptop with unequaled capabilities.

## Options

Now that we have described the flashy features of this unit, let us take a closer look at the internals and options of the Datavue Snap 1+1. The basic computer, consisting of both modules, comes in configurations containing two 3.5" disk drives (list price $2295) or one 3.5" drive and a 20 Mb internal hard disk (list price $3495). The basic unit in either configuration includes 640 K RAM, an AC adapter, an operating system, and an operations manual. The backlit screen costs an extra hundred bucks, and the gaslight screen costs an extra $200. The computer is powered by an NEC V20 processor which can run at either 4.77 or 9.54 MHz.

The keyboard is a standard 84 keys. The layout is a combination of old and new styles. The control key is to the left of the "A," but 10 function keys are strung across the top of the keyboard above the standard number keys. The upper right-hand corner of the keyboard contains a numeric keypad that can serve either for numbers or as cursor control keys. There are both NumLock and CapsLock keys, but neither has an indicator to show whether it is on or off. I like the action of the keyboard and am glad the designers have included tactile marks to indicate the "f" and "j" keys.

## Battery Operation—Yes And No

While the Snap 1+1 is advertised as a battery operated portable, a number of caveats must be issued to prevent a reader from purchasing this unit only to find that it does not meet his or her needs. If you buy the model with the hard disk, the AC adapter must be used at all times that the back portion of the computer, containing the disk drives, is used. If you use the front portion as a stand-alone portable, you may not use the gaslight screen without an AC adapter. So, while the requirements of portability are met with room to spare, if your primary need is really battery operation you are limited to specific configurations.

The battery setup on this machine is quite unusual, but makes perfect sense in view of the modular design of the product. A rechargeable nicad battery is available as an option ($299.00). It is a separate module which attaches to the rear of either the front or back module of the computer

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for those occasions when you need portable battery operation. The unit I was sent for evaluation has both a hard disk and a gaslight screen, which made the nicad unit unnecessary under almost any circumstances.

A large battery with an auto adapter is sold as an accessory for $299. The adaptor allows you to power the computer from either an automobile battery (through its cigarette lighter) or from this special battery, which has its own female auto adapter receptacle. This is a powerful but relatively large battery that can be recharged from AC. This battery will power any part of the Snap 1+1, and comes with its own carrying case. But be warned that this is not the kind of battery that will fit into your pocket. It is heavy, but provides hours of service with any configuration you have.

A word is in order about how the front module of the Snap 1+1 works. When you disengage the front from the back unit, you are left with a computer without disk drives, but with all of the ports and 640 K RAM. A slot in the front unit will accommodate either of two RAM cards: 512 K or 1 Mb. Both of these memory cards have internal batteries that are designed to hold the contents so they can be used as RAM disks. The idea is that you load your software into the RAM disk and transfer your data to either a floppy disk or the hard disk when you return to the base unit or when you connect to another computer via modem. Although even the larger RAM card does not offer the kind of memory you are used to with a hard disk, it is enough to allow you to carry a super lightweight unit into the field.

## The Wave Of The Future

Datavue has beaten the competition to the punch with this design, as the wave of the future seems to be extremely lightweight machines with lots of internal memory and no drives. NEC has received a lot of publicity about its recently announced four-pound laptop that does just this. These new computers, however, are designed to be used exclusively in connection with a desktop machine and do not offer the versatility of the Datavue. On the other hand, the newer laptops are truly battery operated portables.

I have put this unit through its paces for over a month and in general am pleased with its performance. While there are faster computers on the market, the setup of the Snap 1+1 offers everything you need in this class computer. I found that certain software glitches happen from time to time, but these inconsistencies were annoyances rather than downright problems. Occasionally, for instance, on power-up the computer would stop in the middle of the initialization. Either the tap of a key or a reset would solve the problem. One feature that I have seen on no other laptop, by the way, is a reset button on the side of the unit.

A number of internal software features are especially helpful for either the beginning or advanced user. A setup menu that displays on power-up provides an opportunity for resetting any of the parameters. A world-time screen shows the time in major cities around the globe. This screen is also selected to reset the internal clock provided with the computer. It is a good deal easier than using DOS commands.

The major complaint I have with the unit is the operations manual. While most of the necessary information is provided, I found it difficult to find some of the facts I needed. For instance, there is an "Fn" key for which I can find no reference in the manual nor use in the operation of the computer. Other laptops use such a key, but it does not seem to be necessary with this unit. I commend the designers for putting together a laptop keyboard that does not require the use of an "Fn" key, but do not know why it is there or why it is not mentioned in the operations manual. Similarly, although I was able to configure the computer to work perfectly, it was not the result of the skimpy descriptions provided in the manual. I was never able to really set the front unit up to work from the RAM disk. I know that the unit performs flawlessly, but it was not as easily configured for this use as the manual suggests. I would have preferred a more detailed step-by-step guide. Despite these slight annoyances, however, the Snap 1+1 offers a significant alternative to all the other "me too" laptops on the market. ■

## Resources:

Snap 1+1
Datavue
One Meca Way
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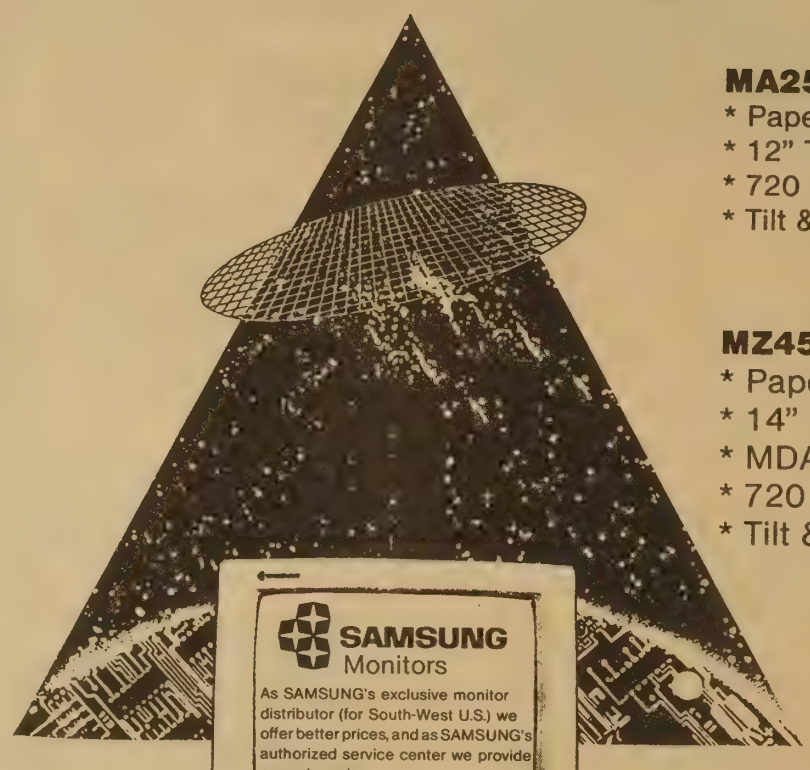
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# MAC @ WORK

**IN THIS ISSUE...**


**Graphics—PC To Mac, There And Back** 64
*By Lenny Bailes*
First of two parts focusing on color graphics and how to move them between Mac and PC environments—inexpensively.

**WriteNow 2.0** 70
*By Tony Rocco*
Smaller than some desk accessories, economical enough for people spending their own money, and powerful enough for *Word* users to take it seriously, T/Maker's upgraded word processor offers impressive performance at a rock-bottom price.

**Mac-PC Connectivity** 76
*By Rob Beauchamp*
Database file compatibility—what's here, what's not.


# GRAPHICS

## PC to Mac, There And Back

### By Lenny Bailes

The Macintosh is the tool of choice for graphic artists, the PC for businessmen. This folk axiom is learned by all new computer users. In the early development of both machines the axiom was useful for consumers.

But now, in 1989, folk knowledge of this sort is not so useful. Why shouldn't I be able to draw an organizational chart with *FileMaker* on the Mac and send it over for a report done on the PC with *WordPerfect 5*? Why can't a businessman generate a graph with *Lotus* or *Harvard Graphics* and give it to a brochure designer in his company who uses a Mac? Why not take a gray scale image or a logo out of Adobe *Illustrator* and send it over to the PC for letterhead?

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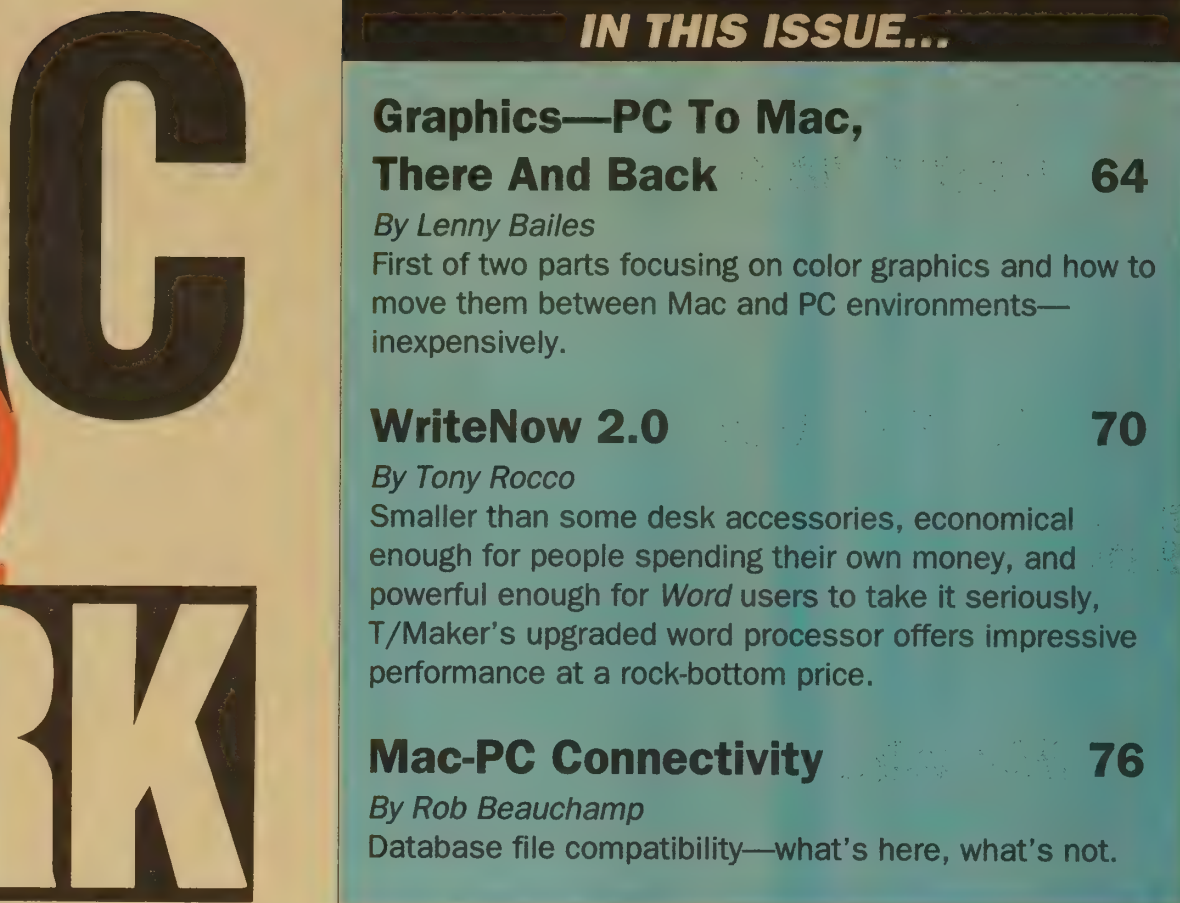


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Note: (CGA)=Requires Color Graphics Adapter

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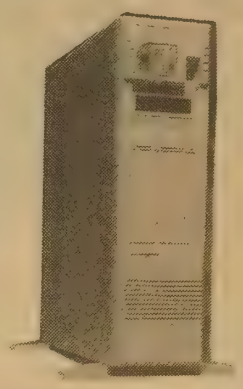

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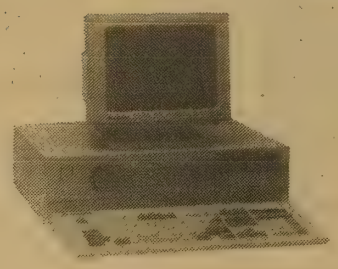

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**Macs and PCs are both capable of performing as either business tools or graphic design tools, and many offices use both types of computer. Most people know that ordinary text can be exchanged between the two environments. Much less is commonly known about exchanging graphics.**

and Traveling Software have begun to make people aware that ordinary text can be exchanged between the two environments.

Much less is commonly known about exchanging graphics. There are some attempted solutions which have attracted public notice, but they're expensive and won't always work—e.g., "Just use *PageMaker* and Adobe *Illustrator*." If you buy both the Mac and PC versions of these programs you will, indeed, be able to transfer some graphic images. (*PageMaker* is limited to transferring bitmapped images only. Try sending a *PageMaker* file with a *MacDraw* illustration over to a PC and see what happens).

A bitmapped image is just a list of pixels to be turned on and off over a defined range. This is stored by your paint program as a numerical array, and transferring that array is not so difficult. Object oriented images are different. They are the kind that don't deteriorate when you shrink and enlarge them. Object images are formed by vector algorithms which tell your software how to draw the lines ((HPLOT or DRAW (00,10)-(50,100) in BASIC)). Each program has its own set of proprietary drawing instructions.

If you're dealing with *AutoCAD*, *Harvard Graphics*, and *Micrografx Designer* on the PC, or Aldus *FreeHand* and Adobe *Illustrator* on the Mac, there are now some commercial utilities which can convert object oriented (line art) images between them, or into the generic Macintosh PICT format. More commercial tools are on the way, and these will be dealt with in part two of this article.

Meanwhile, if you don't want to send your artwork over Ambassador Class, you can still fly. Logos, graphs, and creative artwork can be transferred between Macs and PCs on a rough-and-ready level with many programs created by shareware hackers on public bulletin board systems. These people were exchanging graphics files before the advent of programs like *Curator* on the Mac or *Hijaak* on the PC. *Curator* and *Hijaak* are both excellent commercial packages for file conversions. In this article I'll be focusing on applications which are less well known, but still get the job done.

## PART I—Flying Coach Fare (Bitmapped Images)

Just as word processors define text in individual, unique file formats, so do graphics programs. Just as more popular word processors have established standards for text, standards for graphics are now beginning to emerge.

For bitmapped images, the Macintosh standard is *MacPaint*. On the PC the most common format is *PC Paintbrush*. To successfully port images from the myriad of paint programs, the first step is to put your image into one of these two formats. (There are other filetypes which are shared by Macs and PCs, but they're not universally compatible, owing to proprietary reservations by software companies. We'll get into this later for those determined to preserve their scanned images in all of their gray scale glory.)

Let's assume that you've got a nice cartoon one of your arty friends has done on a Mac, and you've got a PC clone at home. You want to add the cartoon to a scrapbook of things created with *PC Paintbrush* (or *Dr. Halo*, *Windows Paint*, *GEM Paint* —substitute your favorite PC drawing program).

If you and your friend have modems, you can move the file from one computer to the other over the telephone. If you don't have a modem, there are now numerous Desktop Publishing Parlors which will let you transfer the file for $10-$15 an hour. The nicer ones will even prorate the time, since the transfer operation should consume no more than 10 minutes.

### Mac To PC

To go from Mac to PC, save the image as a *MacPaint* file. If the file creator had some other original format, you can take the display on the Macintosh screen and do a *MacPaint* screen dump with Command-Shift-3. To transfer the file with modems, your best bet is to use *Red Ryder* on the Mac, and any communications program which supports XMODEM on the PC.

Macintosh communications programs have their eccentricities as to which files can be sent with which protocols. In general, you should select MacBinary XMODEM. If this doesn't work, *Red Ryder* has an option called "Supercharged XMODEM" which removes error checking. With *Freeterm*, *MicroPhone*, *Versaterm*, etc., if MacBinary XMODEM doesn't work you have the alternative of converting the file into something which can be sent in "text" format. The Mac utility *Binhex* will take a *MacPaint* file and turn it into a .BIN file which can be transferred as text (some programs call this "text XMODEM"). Using *Binhex* to send a file as "text" may also produce best results if you don't have software on the PC side which can deal with MacBinary fileheaders (more on this later).

If you go to the laser parlor, someone will probably be able to show you how to use TOPS to painlessly accomplish the same result. Just point and click on the Mac and the file will pop up on the PC's hard disk.

### Shareware Tools

Okay, you've got the file over to a PC now in *MacPaint* format. If you're working with *First Publisher*, *Ventura Publisher*, *PageMaker* or *WordPerfect 5*, your job may be done. Each of these programs will read most *MacPaint* files directly.

If you need to manipulate your image for formats other than *MacPaint*, there is quite an assemblage of shareware floating around public BBS systems to help you.

*Optiks* and *Iconvert* are PC shareware programs which can read a raw *MacPaint* file and do editing or file conversion. The "public" version of *Optiks* will save a *MacPaint* file in BASICA format. The registered version will save it in virtually any PC compatible format you desire, including *PC Paintbrush*, Aldus-Microsoft .TIF, and Encapsulated PostScript. *Optiks* permits fatbit editing, addition of text in many different fonts, and various image manipulations. *Iconvert* is fully operational for multiple format conversions in the trial package. It converts to and from *MacPaint*, *PrintMaster*, *Print Shop*, *NewsMaster*, BASICA, *Fontasy*, *PC Paintbrush*, *Windows Paint*, and RLE. *Iconvert* allows you to view an image, perform some manipulations and mark multiple copies for color separation.

There are also some PC picture viewers designed to display files called ReadMacs. ReadMac is just a pseudonym for a *MacPaint* file which has been ported to the PC environment. Sometimes the Macintosh file header has been stripped out. *Allmac* and *TheGrin* are two shareware "ReadMac" viewers. *Allmac* will display a *MacPaint* file on the PC screen, allowing you to grab it with a screen capture utility. It allows fatbit editing and resaving in *MacPaint* format. *TheGrin* will not only display images, it will allow enlargement, reduction, rotation, adjustment of contrast, and optional saves in *MacPaint* or BASICA BSave format.

Sometimes a *MacPaint* file won't load directly into a commercial PC publishing package like *WordPerfect* or *Ventura*. This is usually due to the MacBinary fileheader mentioned in the last paragraph. MacBinary fileheaders contain information sent over by the Mac, but unwanted by the PC—the name of the file and its creator. Check your nearest shareware vendor for utilities like *Mac2Vent*, or *DeCap* which strip out the fileheader. These will decapitate the file, retaining only the desired bitmap array information. *Mac2GEM*, *MacHalo*, and *MacWind* are alternate conversion programs for other PC paint packages.

### PC To Mac

To send an image from the PC to the Mac, we apply the procedures outlined above in reverse. The PC doesn't have a built-in screen dump key, but there are numerous free and commercial utilities which will save a screen to disk for you. Since we're flying coach now, let's mention *Cap* and Keith Graham's *OKScrn*, two shareware programs which will sit in memory and write a screen to a *PC Paintbrush* file when called for. Good commercial paint programs generally have capture utilities which will do

screen dumps to their own particular formats. If one of these matches *Iconvert*'s defaults, you can change the file directly to *MacPaint* format. *First Publisher* is an inexpensive commercial program which captures screens and reads several file formats (*PC Paintbrush*, Microsoft *Paint*, *PC Paint +*). *First Publisher* saves bitmapped screens as *MacPaint* files. This is a good alternate tool for image preparation and conversion which also provides low-end desktop publishing capability.

Sending files from the PC to the Mac by modem has a few extra pitfalls. In general, you should select the MacBinary option on the Mac software. Receiving files with "text XMODEM" may result in unusable files. If your communication package lets you set incoming default resource information on the Mac, set the creator to *MacPaint* (MPNT) and the file type to "painting" PNTG.

If your Mac communication program doesn't let you set the filetype, the incoming file will appear on the desktop as a blank text icon. To view the file in *MacPaint* or *SuperPaint*, it must show a paintbrush icon. You can change the filetype with *ResEdit*. Load *ResEdit*, select the ported file and click on Get Info. Change the file creator to MPNT and the file type to PNTG.

Again, if you transfer the file with TOPS, *MacLink*, or *LapLink Mac*, this will all be taken care of for you automatically. The file will just pop up on the Desktop ready to view.

## Shades Of Gray

If you've followed what we've done so far, now let's assume you have a 16-color *PC Paintbrush* file which might look nice in a Mac art library. *Optiks* and *Iconvert* will make the image into a black and white bitmap after conversion to *MacPaint*—not nearly as pretty as the original.

If you're fortunate enough to own Inset Systems' *Hijaak*, you've got a conversion utility which will change a color *Paintbrush* file into a *MacPaint* file with dithered gray scales. (Dithering is a process which simulates gray scales by integrating white space into the image). Dithered gray scales look better than straight black and white. *WordPerfect 5* also has a conversion utility which changes 16 or 256 color palettes to dithered grays. Converted *WordPerfect Graphics* files (WPGs) can be displayed by a shareware program called *WPDraw*, captured and converted to *MacPaint* format.

For the more adventurous, *PC Paintbrush* and *Inset* allow setting of black/white ratios for each color when printing a file. Dithered images can be printed to disk in Hewlett-Packard Printer Control Language by choosing LaserJet as your printer. The resultant files can converted back to *MacPaint* format by *Hijaak* or the registered *Optiks*.

## Color

The basic technique of capturing a bitmapped screen and sending it to another computer in a compatible format can be extended to allow transmission of 256-color images. There is one bitmap format which was designed to be used on both the PC and Macintosh (as well as the Atari and Amiga). The GIF (Graphics Interchange Format) was developed by CompuServe for exchanging files with their on-line service. GIF files provide for display of up to 256 colors in both Mac and PC environments.

The simplest way to transmit a file is to do a dump of the image on your screen to the GIF format. ImageSet Corporation of San Francisco offers a utility called *PixelPop* which accomplishes this on the PC. The evaluation version will capture screens in all CGA, EGA, VGA, and Hercules modes to GIF files. The registered version permits saving screens in other formats, as well. ImageSet Corporation is also responsible for the color processing on some of the graphics which accompany this article.

Several shareware PC utilities will convert a *PC Paintbrush* file to GIF, retaining all of the color information. Look for *Cvtgif.arc* or *Easel310.ARC* on your BBS or from local disk vendors. *Cvtgif* just reads in *Paintbrush* files, writes out GIFs. *Easel* is a shareware display-edit-conversion program which runs under Microsoft *Windows*. It can cut and paste, rotate and resize images. *Easel* reads and writes to *PC Paintbrush*, GIF, MS *Windows Paint*, *MacPaint* or Mac startup screen formats.

The transfer by TOPS to the Macintosh is semi-automatic. If you're sending files by modem, *Red Ryder* is still the best software to use on the Mac side because of its ability to specify the file creator of the incoming image. (I also used *MicroPhone* successfully, set for MacBinary transfer. *Versaterm* wouldn't cooperate, and with the GIF files, the "text" option won't transmit a readable file).

## Modifying Images

On the Macintosh you can work on a GIF image with an application called *Vision Lab*. *Vision Lab* is a shareware program authored by John Raymonds. It will display an image in color on a Mac II or in dithered grays on an older machine. On the Mac II, color and dithered gray scale versions of the image can be displayed on the screen at the same time. Vision Lab will load the ported PC GIFs without your having to change the file creator, but if you want to be able to click on a file you must resave it, or use *ResEdit* to change the creator to "JRVL." File type is "TEXT."

*Vision Lab* reads and writes in PICT2, EPSF, *MacPaint*, and *PixelPaint* formats, as well as GIF, allowing images to be imported from or exported to practically any Macintosh application. This also makes *Vision Lab* a useful tool for sending color images back to the PC environment.

On the PC side, GIF files can be worked on with *Easel*, or viewed by non-*Windows* shareware. *CompuShow*, *VGIF*, *Grey*, and *Picem* are GIF viewers which support a variety of low, medium, and high resolution graphics modes, color, and monochrome. Screens can be recaptured from the GIF viewers for use with PC graphics and desktop publishing applications. *VGIF* permits screens to be resaved in *PC Paintbrush* format, retaining color palette information.

Part two of this article will talk about object-oriented (vector) artwork, exchanging *AutoCAD* and *MacDraw* files, PICT to Targa for *Lumena*, TIF and Encapsulated PostScript. See you next installment in Ambassador Class. ■

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# RESOURCES

## PC & Mac Commercial Software:

*PC Paintbrush* (Z-Soft); *Hijaak* (Inset Systems); *WordPerfect* (WordPerfect Corp.); *First Publisher* (Software Publishing Company); *PixelPop* (Available for evaluation from ImageSet Corporation, 555 19th Street, San Francisco, CA 94107); TOPS (Sun Microsystems); *MacLink* (DataViz); *LapLink Mac* (Travelling Software); *The Curator* (Solutions International); *Red Ryder* (FreeTerm); *MacPaint* (Claris); *ResEdit* (Apple).

## PC Shareware:

(capital letters are filenames for programs on public BBS systems)

### Convert/Edit:

*Iconvert* (J. Michalski, $35, CompuServe: 70441,274 Genie: J.Michalski—ICON110D.ARC); *Optiks* (Keith Graham; $79.95, 32 Smith Avenue, Nyack, NY 10960 or register & download on The Other Woman BBS, 707/938-3508—Demo is OKF211.ARC); *TheGrin* (Ian Davis, $15, 1929 Whitecliff Court, Walnut Creek, CA 94596—TGRIN210.ARC); *Allmac* (Frank Schweiger, $5, 10083 Heytesbury Ln, Sandy, UT 84092—ALLMAC14.ARC); *Easel* (Kim Levitt, $20, Synergistic Enterprises, 8033 Sunset Blvd., #975, Los Angeles, CA 90046 Genie:KIM-LEVITT CompuServe: 76137,1602 EASEL310.ARC); *WPDraw* (Kenneth Macleod, BBS:617-965-8294—WPDRAW.ARC).

### File conversion only:

*MacHalo/HaloMac* (MACHAL10.ARC, HALOMAC.ARC), MAC2VENT (Michael Volk, $5, 91 Princeton Arms West, Cranbury, N.J. 08512); *MAC2GEM, MAC2WIN, WINDMAC, DECAP* (Ariel Frailich CompuServe: 72477,326); *FIXPCP*.

### Screen Capture:

*OKScreen* (OKSCR00.ARC); *Cap* (CAP.ARC); *GemCap* ($5, Alchemy Mindworks, P.O. Box 313, Markham Ontario, L3P 3J8 - GCAP10.ARC).

## GIF utilities:

*Halo2Gif* (Rick Martin, CompuServe: 73105, 1160 - HALOGIF.ARC); *Cvtgif* and *Picem* (John Bridges, Public Domain, CVTGIF.ARC, PICEM19B.ARC); *CompuShow* (Bob Berry, $15, Canyon State Systems and Software, P.O. Box 86, Sedona, AZ 86336, CompuServe: 76555,167 CSHOW6.ARC); *Grey* (Michael Vigneau, 25 Emerald St., Newton, MA 02158 CompuServe: 76703,4275 - GREY-15.ARC); *VGif* (Bob Montgomery, $10, 123 Parsons Road, Longwood, FL 32779 - VGIF30.ARC).

## Mac Shareware:

*Vision Lab* .067 (John Raymond/Koala Technologies, Delphi:Jones CompuServe: 76174,205 Genie: Raymonds); *BinHex* (Mainstay, 28611B Canwood St. Agoura Hills, CA 91301).

## BBS Systems:

These are some graphics bulletin boards where you may find the shareware discussed in this column:

**PC Only:** Pixel Penguin (415/482-3402), The Network (415/474-4523), Mainframe (415/992-8099), Telenaut (415/388-4007), The Other Woman 707/938-3508 (registered version of *Optiks*), PC Rockland (also *Optiks* registration, lots of files! 914/353-2538).

**Mac and PC:** Tsunami (415)726-2726 (*Vision Lab* and other Mac graphics utilities).

## File Transfers

(Rent time on TOPS network).

**Copy-Rite**
74 New Montgomery Street, San Francisco, CA (415/546-1177).

**Krishna Copy Centers:** various locations in Bay Area (800/323-3688) (San Francisco: 415/543-3688; Berkeley: 415/540-5959).

**Abacus Desk Top Publishing Systems** 547 Frederick, San Francisco, CA (415/759-9508).

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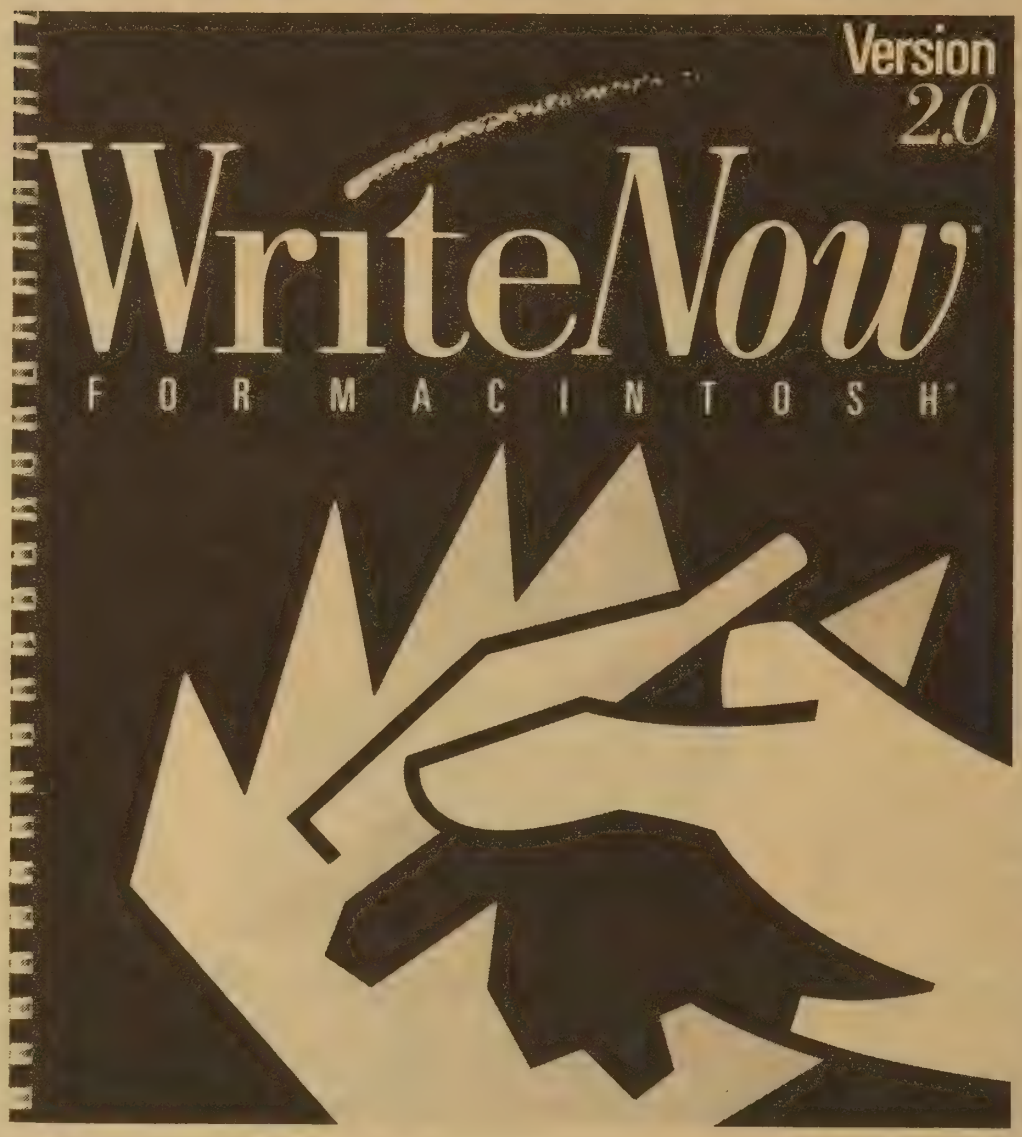
## *Quite Possibly, The Software Buy Of The Century*

# WriteNow 2.0




As a dedicated Microsoft *Word* user, I got sick and tired of hearing *WriteNow* devotees tell me how *their* word processor was the only true Macintosh word processing application (very "Mac-ish," they called it). "Well," I'd say, "does it search and replace formatting characters?" "No," came the inevitable reply. "Does it have style sheets?" Likewise, no. "How about..." Well, you get the idea. *WriteNow* may have been Mac-ish as hell, but *Word* had the power and it was power I wanted.

But, as they say, that was then, this is now. With the release of *WriteNow* 2.0, T/Maker has taken a giant step toward addressing the needs of the proverbial power user. But what's really most remarkable is not just the many new features, but the fact that they're contained in an application smaller than some desk accessories and not much more expensive. The application takes up 102 K and can be had most places for little over a C note. *WriteNow* 2.0 is virtually a software miracle, undoubtedly the best commercial value in the Macintosh market.

All of which isn't to say that the hard core power user will want to discard *Word* and buy *WriteNow*. If you need automatic indexing or table of contents generation, stick with *Word*. If you plan to make heavy use of style sheets for formatting text in a document, *Word* will do a better job. You can't sort lines of text in *WriteNow*, and it doesn't have sophisticated outlining capabilities (although *Word*'s are none too great either). But all in all, *WriteNow* offers enough power and flexibility to satisfy all but the most demanding user. And, yes, it is definitely more Mac-ish.

Being more Mac-ish, of course, gives *WriteNow* an edge over *Word* in offering the beginner an easy learning experience. Keyboard commands are more in line with the Macintosh standard—no shift/command/key maneuvers, just command/key, and no esoteric command sequences for selecting all the text in a document or creating a page break. Ease of use is certainly one of the major strong points of this word processor. Virtually all the commands are right there under the menus. The only dialog boxes to mess with are related to Check Spelling (which is excellent), Find/Replace, Count, and Change Case. And looking under the menus can leave you with the misleading impression that this application doesn't offer anything more than *MacWrite*. Nothing could be further from the truth.

***What's really most remarkable is not just the many new features, but the fact that they're contained in an application smaller than some desk accessories and not much more expensive.***

## The New Now

Old-time *WriteNow* users will be happy to learn that the new version supports cursor keys. In addition, Undo, Cut, Copy, and Paste commands have keyboard equivalents that work on the Extended Keyboard, and Home, End, and Page Up and Page Down keys on the Extended Keyboard are supported. *WriteNow* does some more things, too, like count all the letters, words, and paragraphs in a file, provide optional fixed line spacing to enhance the appearance of a document, give you up to four WYSIWYG columns, make case changes, and make global text formatting changes. Business users will find *Word*–compatible Mail Merge with conditional selections a very useful addition to *WriteNow*. It was partially the absence of mail merge capability that kept *WriteNow* from making much headway into business markets, but with the addition of this feature business users should find the application very suitable.

## A Matter Of Style

Does the new *WriteNow* have style sheets? Yes and no; it has Style Sheet Equivalents. While I found these Equivalents quite useful and easy to use, I can imagine cases where the more powerful style sheet capabilities in *Word* would be more efficient. But since many individuals can quite happily live to the end of their days without seeing a style sheet, I would say the Style Sheet Equivalents in *WriteNow*

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are more than adequate for most people. If you need to make consistently heavy use of style sheets, incorporating three or four different formats in lengthy documents, you may want to opt for the more powerful capabilities of *Word*, however.

Style Sheet Equivalents consist of three basic capabilities: copying and pasting the ruler, making global font, typeface, point size, and paragraph changes, and setting document default values. Copying and pasting the ruler is useful for taking the paragraph formatting of a previous paragraph and using it to format a new paragraph(s). If you're using several formats in a long document, however, it can be clumsy scrolling back and finding the last paragraph with the formatting you want, then forward again to the new paragraph(s). It can become more awkward still if you also want to make typeface and font size and style changes, as there is no way to copy these changes along with the paragraph formatting changes.

As far as changing typefaces and font sizes and styles goes, there is no way to go from, say, 10 point Helvetica Bold to 12 point Times Roman Italic in one stroke *as you are creating a document*, when it is most useful. You can go back to a document and make a global, after-the-fact change to all text with a given typeface or font size or style, but that is a relatively less useful capability, I think. Similar global changes are likewise possible with paragraph formatting (line spacing, indents, etc.).

The last Style Sheet Equivalent sets default values. If you put a blank document titled Stationery in the same folder with *WriteNow*, each new document you create will have the margin, paragraph, and font size and style settings of that document. Slick, simple, and useful, and easy to override with the press of an Option key.

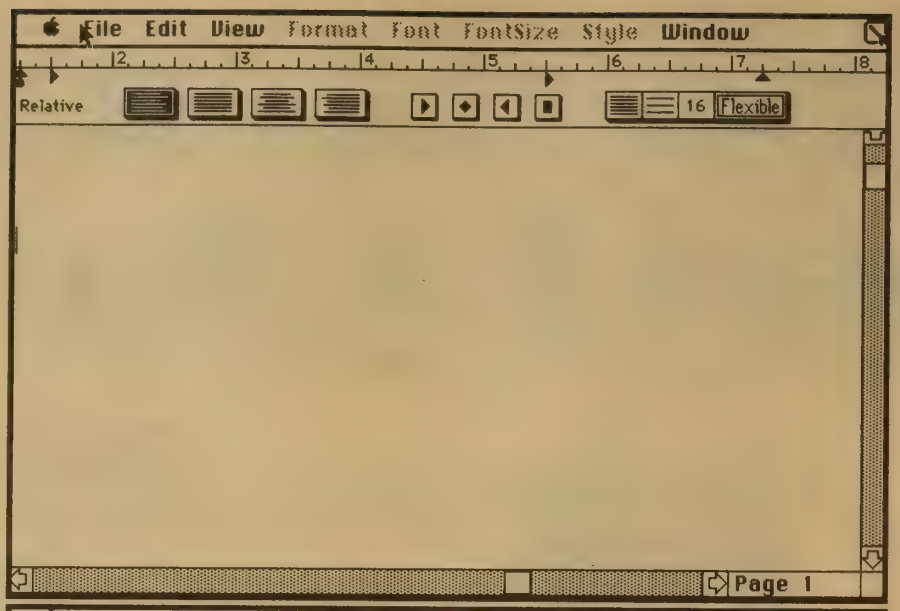
## New File Formats And More

One thing you couldn't do with *WriteNow* 1.0 was easily import or export text in different file formats. With the new version you can import and export text, text with line breaks, *MacWrite* files, and RTF files from within the application. (RTF, or Rich Text Format, is the Microsoft Interchange Format.) *WriteNow* uses file filters to import and export different file formats. In the future, T/Maker plans to introduce filters for other formats. The only gripe I have with these filters is not being able to directly open a *Word* file. You must first save the document in RTF before *WriteNow* can open it. If you have *Word* files laying around that you would like to open with *WriteNow*, you'll first have to find a copy of *Word* to open them. I have been informed, however, that T/Maker is working on a new filter that will directly open Word 3.0 and 4.0 files.

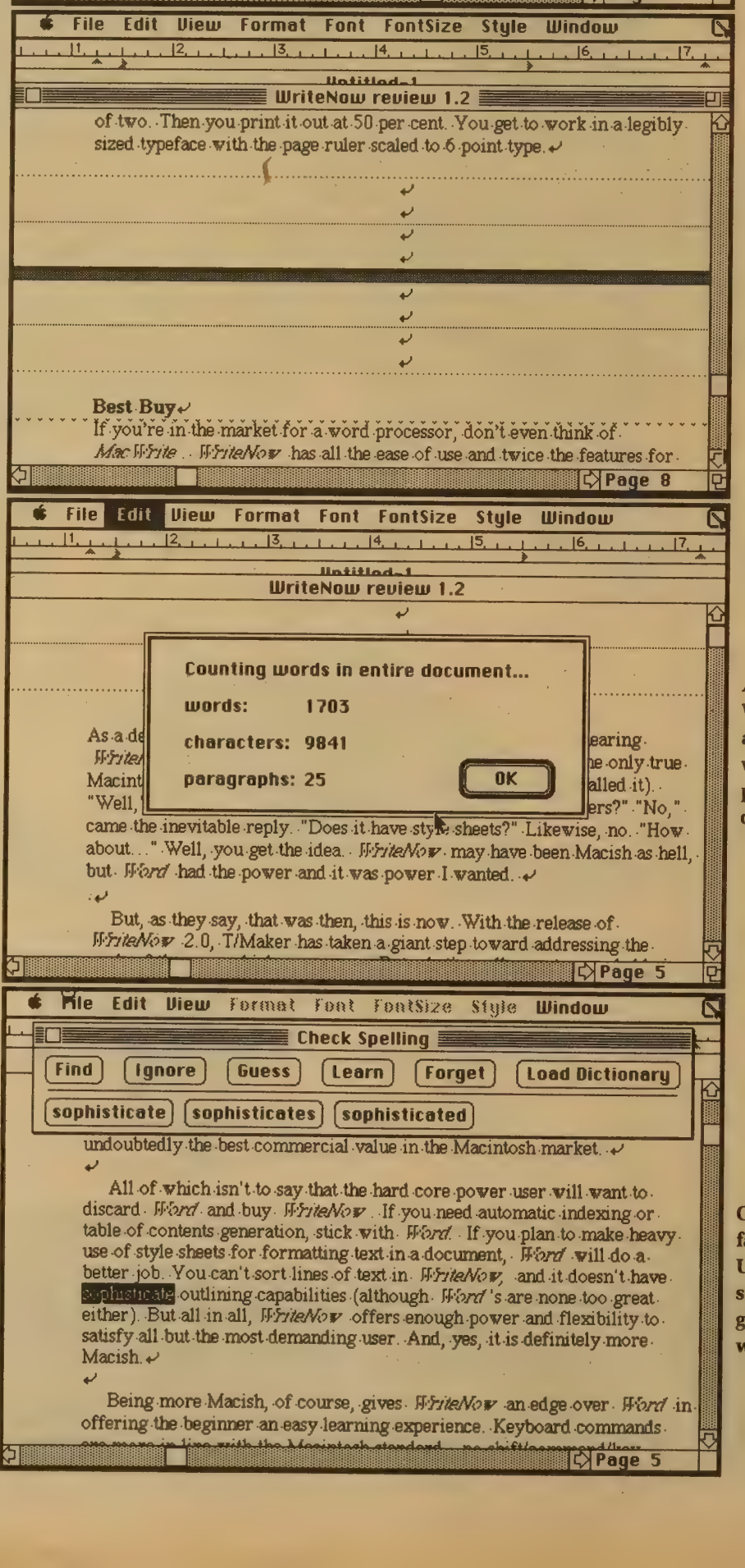
One other minor beef: In order to keep the lines of a paragraph together rather than have a single paragraph cross two pages, you have to go through the document and select the lines to keep together. I would love to see the *Word*-like feature of doing this automatically.

But from here on, folks, there is nothing but good news and praise about *WriteNow*. In no particular order, here are the things I like best about it.

**Speed:** This word processor is fast. It does everything quickly, including searching and replacing text, spell checking (especially), and counting characters, words, and paragraphs. According to T/




**The ruler sets alignment, tab stops, and line spacing; leading can also be adjusted, and rulers can be copied and pasted from one paragraph to others.**


File Edit View Format Font FontSize Style Window
WriteNow review 1.2
of two. Then you print it out at 50 per cent. You get to work in a legibly sized typeface with the page ruler scaled to 6 point type.
Best Buy
If you're in the market for a word processor, don't even think of
Mac Write . . WriteNow has all the ease of use and twice the features for
Page 8
File Edit View Format Font FontSize Style Window
WriteNow review 1.2
Counting words in entire document...
words: 1703
characters: 9841
paragraphs: 25
OK
Page 5

**The WriteNow window displays an actual break between pages. A Show Space command shows paragraph breaks, word spaces, and page margins.**

**A real plus in WriteNow is the ability to get an exact word, character, and paragraph count quickly.**


File Edit View Format Font FontSize Style Window
Check Spelling
Find
Ignore
Guess
Learn
Forget
Load Dictionary
sophisticate
sophisticates
sophisticated
undoubtedly the best commercial value in the Macintosh market.
All of which isn't to say that the hard core power user will want to discard Word and buy WriteNow. If you need automatic indexing or table of contents generation, stick with Word. If you plan to make heavy use of style sheets for formatting text in a document, Word will do a better job. You can't sort lines of text in WriteNow, and it doesn't have outlining capabilities (although Word's are none too great either). But all in all, WriteNow offers enough power and flexibility to satisfy all but the most demanding user. And, yes, it is definitely more Macish.
Being more Macish, of course, gives WriteNow an edge over Word in offering the beginner an easy learning experience. Keyboard commands
Page 5

**Check Spelling is very fast and intelligent. Unlike Word, several suggestions are often given for misspelled words.**

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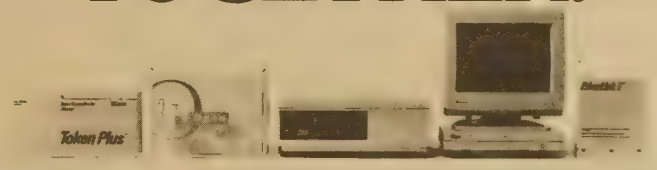


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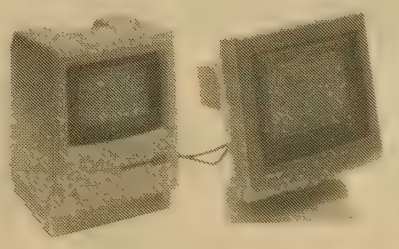

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Maker's measurements, at least, *WriteNow* is considerably faster than virtually anything out there including *Word*. It's speed is all the more impressive when you consider that it paginates as it goes along. *Word* waits until you print or use Page Preview, or deliberately paginate the document.

**Spell Checking:** *WriteNow* has an excellent and exceedingly speedy spell checker. A 50 thousand and 100 thousand word dictionary are provided, as well as an empty dictionary for specialized use. The spell checker offers very intelligent suggested spellings for misspelled words, and often offers more than one of them at once. Each word appears in a button you click. And you can make *en masse* additions to any dictionary by simply selecting an entire text file and having the spell checker learn it.

**Search And Replace:** Very fast, allows forward and backward searches, and can automatically wrap around to the other end of the document. It can also search and replace Tab and Return characters, which is a blessing to anyone formatting long text-only documents such as those output from a database.

**Case Changes:** Let's say you decide a line you placed in upper case letters should be written in lower case with the first letters in each word capitalized. Just select the line and make the change with the Change Case command. You can also change text to all lower case or all caps. A surprisingly handy feature.

**Headers, Footers, And Footnotes:** All work in a simple, straightforward manner. Double clicking at the top or bottom of a page will give you a Header or Footer window. All search and replace, spell check, and copy and paste ruler options are operable.

**Page Zooming:** Here's a for instance. Let's say you're a lawyer and you're writing some of that nefarious small print lawyers are famous for. Do you write it in squiggly six point type? No, you can't even read that on the screen. You select 12 point type and enlarge the ruler size by a factor of two. Then you print it out at 50 per cent. You get to work in a legibly sized typeface with the page ruler scaled to six point type.

## Best Buy

If you're in the market for a word processor, don't even think of *MacWrite*. *WriteNow* has all the ease of use and twice the features for little extra money. And if you're contemplating *Word*, think long and hard about the extra money you would spend. Do you really need those extra features like table of contents generation and automatic indexing? Style sheets? Line sorting? Perhaps you do. But I would advise all but the most power crazy user to take a good look at *WriteNow* first. It is easier to use, has a better spell checker, and can do most of the most useful things *Word* does. And it will cost you less (about two hundred less, to be exact).

It may be the software buy of the century. ■

***If you're in the market for a word processor, don't even think of MacWrite. WriteNow has all the ease of use and twice the features for little extra money. And if you're contemplating Word, think long and hard about the extra money you would spend.***


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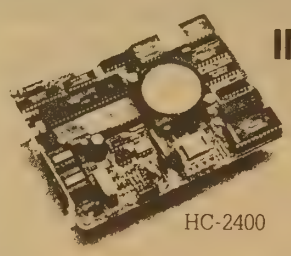
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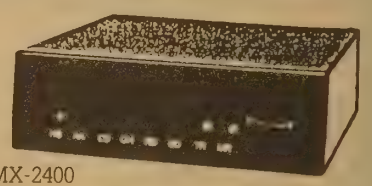
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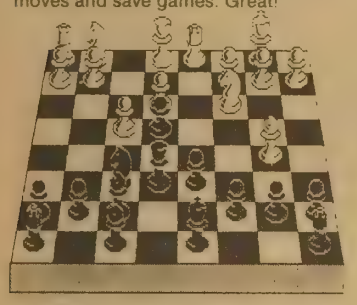

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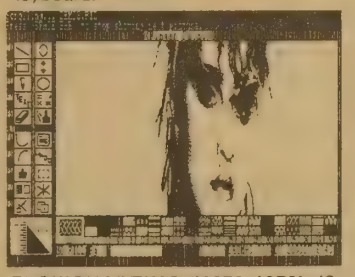

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# MAC-PC CONNECTIVITY

BY ROBERT BEAUCHAMP

# Database Connectivity

## *If Hepburn And Tracy Can Do It, So Can You*

If you have cable TV, you might have caught the movie *Desk Set* over the holidays. Starring Katherine Hepburn and Spencer Tracy, *Desk Set* is about the introduction of a computer into the lives of a group of women who work in the research department of a television network.

Replete with horn-rimmed glasses and sweaters thrown over their shoulders, the "girls" are ready to answer any question; from "what's the weight of the Earth?" to the names of Santa's reindeer. They rush off to their stacks, dig through an extensive collection of reference material, and produce an answer.

Katherine Hepburn's pride is her prodigious and infallible memory. Spencer Tracy's pride is his new computer, which he has been assigned to install in Hepburn's department. The fear of losing her job to a machine gives the silver screen's two most famous Lovers/Combatants another chance to go at one another.

What makes the role of the computer interesting in this movie is the use to which it's being put. It's not a gigantic number cruncher, giving the estimated time of impact of some science-fiction rocket ship. It's a database.

I was so inspired by this movie that I decided to devote my next two columns to databases and connectivity.

This column will devote itself to sorting out all the database file formats.

Next month I'll talk about an application which takes connectivity to a higher level. *FoxBASE+* not only allows you to import files created in a different environment, Mac to PC for example, it also allows you to transfer the database *programs* you've written from one environment to another. This significant step toward groupware should not be left unnoticed, and others should be encouraged to take it.

### Transferring Database Information

There are three ways to transfer your database information from one environment to the other. The first is to simply take the *information* in your database and place it somewhere else. The second is to take *the database itself* and move it to another environment. The third is to actually take programs you've written *using the database* and place them in a new environment, as you can with *FoxBASE+*.

Transferring the information in your database from one environment to another, or from one program in the same environment to another, can be fairly easy. Applications such as *MacLink Plus*, *LapLink Mac* or Tops contain file translators which will take existing file formats and change them into something you can use to import information into another program. They also, of course, aid you in actually getting that file onto the other computer.

Many database applications will also include utilities that save your information into one of these file formats.

The file formats most commonly used for this type of operation are CSV, DIF, SYLK, WKS, and assorted ASCII text formats.

For example, by taking a *dBASE* file from the PC and translating it into a WKS file, you can move the information in the database to an *Excel* spreadsheet on the Mac.

CSV stands for Comma Value. The CSV file format has ASCII text records with commas separating all values. Double quotes surround all text values, and there is a carriage return at the end of each record. It is usually a good way to transfer data from an existing database into a newly created one, because the format of the values within each record matches the format specifications from the original input file.

DIF is a very common format that doesn't contain format specifications. It takes the ASCII text records and put the values in a row and column grid.

SYLK is a format used primarily by *MultiPlan*. It contains spreadsheet formulas and formats.

WKS is the file format of *Lotus 1-2-3*. It is used by most spreadsheets, notably *Excel* and *Jazz*.

What file format you choose to use will depend on a combination of what translators you have, what the database application you are using will import, and what file formats your old database will export.

Oftentimes the process isn't as easy as just translating the file and importing. As anyone who has done this knows, there are often a lot of "loose ends" to take care of. Extra or unreadable characters, disappearing information, and the loss of formatting are all problems encountered on a regular basis. A well documented application should have an entire section on translating files.

### Translating Databases

There will be times when you'll want to transfer an entire database into another format and keep the database's structure along with the information. You'll have varying degrees of success in doing this, depending on which database application you're trying to export to.

Many databases, mostly on the Macintosh, will simply not allow you to do this. Borland's *Reflex Plus* and Acius' *4th Dimension* stand out most prominently in this category. You can import database information into these applications, but only after you have created the new database in the chosen application, and imported the necessary information in a file in an acceptable file format.

*4th Dimension* will import Text, SYLK, DIF, and several other file formats. The *dBASE* file format is not among them, however. *Reflex Plus* has the best documentation on file exchange I've seen in any application. You'll need it, however, as you do the necessary "massaging" to get that information into your new database, especially if you're an *R:BASE* user.

To best translate an entire database you'll need to use that old standby: *dBASE*.

Databases created with *dBASE II* and *dBASE III Plus* on the PC will transfer to *dBASE Mac*.

Conversely, files databases created with *dBASE Mac* will transfer to *dBASE*. The format name for files created with *dBASE Mac* is DBF. Any Macintosh application that will accept a DBF file should take a *dBASE Mac* created database.

In the PC realm, the *dBASE* format is the most widely recognized of all the database file formats. Unlike the Mac world, many PC database applications strive for *dBASE* compatibility. What they are offering are special features not found in any of *dBASE* 's incarnations. If databases created with these applications can be saved in the *dBASE* file format, then *dBASE Mac* would be a good tool to get those databases on your Macintosh.

This doesn't mean, however, that *dBASE* and *dBASE Mac* are the ultimate connectivity solution, as *FoxBASE+* has them beat hands down in this arena. It simply means that if you are concerned about connectivity and you have *dBASE* in both PC and Mac environments, you could have been a lot worse off.

Of course, the best connectivity solution I've seen lately was in the prophetic *Desk Set*. A brusque computer scientist (back when computer scientists were portrayed as brusque, not nerds) and a beautiful, smart reference clerk (back when women could be portrayed as both beautiful and smart, *and a reference clerk*) get together to learn the golden rule of programming: garbage in equals garbage out. And as any MIS manager will tell you, computers create jobs, they don't eliminate them.

Who says there's no romance in databases? ■

*Copyright © 1989 by Rob Beauchamp.* *Rob Beauchamp is a contract writer and freelance computer journalist who lives in St. Paul, Minnesota.*

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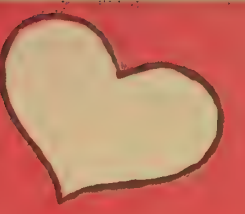

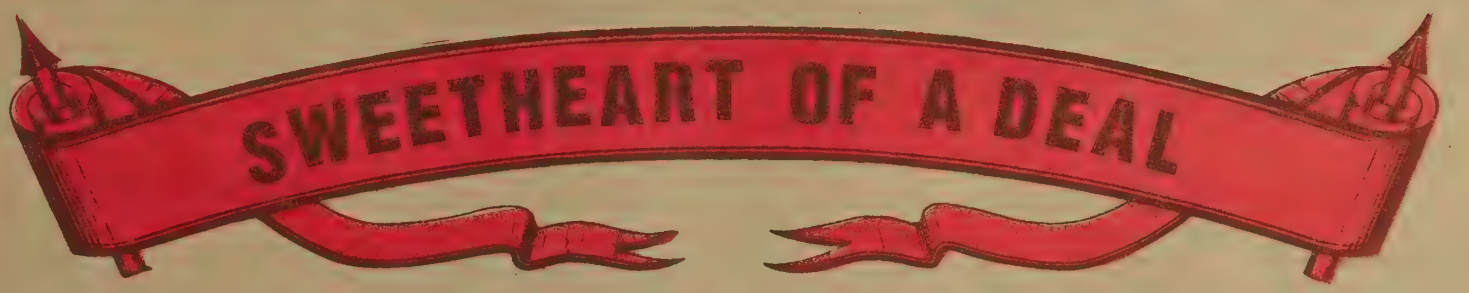


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BY BENNETT FALK

# The A/UX Toolbox: A Kantian Approach

## *What's Real, What's Not*

A long time ago and a little north of here, a man named Wilson saw fit to impart to me a few nuggets of very durable wisdom. He phrased one of them this way:

"Bennett, I figured something out, and I'll tell it to you for free," he said. "Whatever you do, wherever you go, there's always three goddamn worlds out there, and you got to know the difference between 'em. The first one is the world you think is there, the one that's supposed to be there. The second one is the the world you want to be there, the way you wish things were. And after all that, then there's still the world that's really, really there."

Wilson was immensely satisfied with this pronouncement. Unfortunately at the time I was preoccupied with manually unloading a boxcar full of barbecues and could not do the Doctrine of the Three Worlds justice. I filed the thought away for future reference and grunted appreciatively.

Wilson's doctrine lay dormant until I decided a few months ago to say something in this space about the "Toolbox" facilities in Apple's A/UX operating system. In trying to figure out what to say, the demarcations between the apparent, hoped-for, and real worlds have demanded more attention.

## The A/UX Toolbox

"A/UX Toolbox" is the name given to the various utilities and libraries in the A/UX operating system that allow UNIX software developers and end users to use Macintosh user interface routines and Macintosh Operating System facilities. (A/UX is Apple's version of UNIX for the Macintosh II. The Toolbox, of course, is not a part of standard UNIX but an enhancement added by Apple.)

The Toolbox makes it possible to do many wonderful things with A/UX. The UNIX software developer can create new programs that have the same user interface as conventional Macintosh applications. Furthermore, the toolbox is a great boon to developers trying to produce applications for the Macintosh Operating System. With the Toolbox, applications destined for the Mac OS can be created and tested in the UNIX environment (exploiting the wonderful software development tools UNIX offers). Once the program is complete, its source code can be moved to a machine with the native Mac OS and compiled there with a reasonable expectation of running. (It is the programmer's responsibility to insure that the UNIX and Mac compilers are compatible.)

The Toolbox also allows existing Mac OS applications compatible with A/UX to be imported into the A/UX environment and run there. This is an important feature because it will take time for applications developed specifically for A/UX to come to market. Whatever A/UX's merits as a UNIX implementation happen to be, the A/UX-Mac II combination is not going to succeed until users can do things with it. Running existing Mac applications could make A/UX more useful sooner.

"Just what is in this Toolbox?" you may ask. Quite a few things, it turns out.

For the software developer, there are the libraries and header files that extend the standard UNIX C library to include calls to the Macintosh user interface routines. Programs are written containing calls to these routines and then linked with the appropriate libraries.

Several utilities support the software developer. After a program is compiled, it must then be "loaded" to produce a binary image that can be run. A/UX includes a special loading technique to ensure that the resulting program has an adequate memory map.

Macintosh applications contain information about the resources they need. A/UX contains utilities ("rez" and "derez") to allow the developer to control the resources available to the application.

There are also excellent examples (complete with source code) of Macintosh applications for UNIX. The "term" program is particularly useful, providing a windowing capability for A/UX that is roughly equivalent to SCO's MultiView for XENIX.

Other utilities help with the importing of Macintosh applications. The "mfs" utility copies files to the A/UX file system from a Macintosh flat file system diskette. There is no support for copying from Hierarchical File System (HFS) diskettes at the present time. The "settc" utility allows the A/UX system administrator to set the file type and creator of an application imported into A/UX. A program named "launch" is used to start applications that use the toolbox facilities.

Finally, the runtime Toolbox really depends primarily on the "toolbox daemon." The term "daemon" is used for any UNIX process that runs constantly in the background to manage some system resource. Typically, printer access, electronic mail, automated scheduling, and network traffic are all handled by daemons. The toolbox daemon intercepts calls to either the native Macintosh OS or the ROM resident user interface routines.

The toolbox daemon may reformat requests for user interface services (the ROM routines were written in Pascal, and the toolbox daemon has to cope with the C language's calling conventions). It then executes the call using the same code the native Mac OS uses.

**Whatever A/UX's merits as a UNIX implementation happen to be, the A/UX-Mac II combination is not going to succeed until users can do things with it.**

Calls to the native Mac Operating System are handled differently: the toolbox daemon intercepts these calls and gets the necessary A/UX resources to satisfy the request; the native Mac OS code (also in ROM) is never executed.

In either case, the toolbox daemon works unobtrusively in the background. Presently, the toolbox daemon can handle only one toolbox application at a time.

## The Apparent World

So far, so good. But what about the Three Worlds? No one can doubt that the utilities and libraries that make up the Toolbox are more than apparent; they are really there, and they really do work. Furthermore, Toolbox applications developed under A/UX work just fine. The problem is that when importing existing Macintosh applications, the Toolbox works within limitations, and some of these are acknowledged while others are not.

Some of the limitations have to do with the way the native Mac OS features are implemented in the Toolbox. The A/UX documentation explains at some length and quite clearly which facilities of the Mac user interface and native OS are implemented fully or partially or not at all. In general, the features of the Mac OS that manage hardware directly are less likely to be implemented.

Similarly, the documentation contains a good discussion of the compatibility issues that might affect importing a Macintosh application to be run under A/UX. Again, applications that attempt to do direct manipulation of hardware are almost guaranteed to be incompatible. Similarly, applications that are not "32 bit clean" will fail. (Even though the Mac's processor deals with information in 32 bit words, the Macintosh OS uses only 24 bits for addressing memory. The "extra" 8 bits of each address are available for the application's use

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under the Mac OS. A/UX requires the full 32 bits for addresses.)

## Glimpses Of The Real World

Unfortunately, the A/UX documentation is silent on two critical topics: which applications do or don't work under the Toolbox, and what to do when a Toolbox application fails.

These topics are important because, for one reason or another, the overwhelming majority (97% according to one source) of Macintosh programs will not run under the current release (1.0) of A/UX. This might be acceptable if the failures had names like *Icon Eaters From The 12th Dimension*, but Apple's own *MacWrite*, one of the Macintosh "bread and butter" programs, simply does not run under A/UX 1.0.

And when *MacWrite* fails, it fails gloriously. The system console is left with an empty menu bar and a blank grey screen. The mouse pointer can be moved about, but no input is accepted from either the mouse or the keyboard, and unless there's an ASCII terminal attached to the system, the only solution is to reboot.

This is an extremely serious problem, and yet the documentation says only, "Most Macintosh applications can be made to run under A/UX with minor modifications." ("A/UX Toolbox: Macintosh ROM Interface", p. 9.) It should be pointed out that these "minor modifications" must be made at the source code level; an end user will not be able to modify the runtime version of an existing program to make it run under A/UX. Additionally, modifying an existing application to be 32 bit clean will almost certainly increase the size of the binary file that is executed and may affect performance as well.

About the best that can be done in this situation is for Apple to encourage developers to work within the A/UX guidelines. This may result in special versions of applications for the Mac II that will run under both the native Mac OS and A/UX, but it will do nothing for the compatibility of existing programs that can't be used with the A/UX Toolbox.

## The Hoped-For World

My friend Wilson was a pessimist. It was his opinion that it might just be possible to understand what the real world was like after the hoped-for and apparent worlds were stripped away, and that was really all that interested him.

With respect to software, however, understanding the real world is never an adequate goal: there is after all, the question of what will be in the next release. Perhaps the "hoped for" world will show up there. The problem is that raised by Immanuel Kant: "What may I reasonably hope?" Indeed, the point of understanding the real world is to construct a more reasonable expectation of what the future brings.

The A/UX Toolbox, like all the best things about the Macintosh, certainly stirs the imagination. It is tempting to wish for extravagant things from the Toolbox, to imagine, for example, that there is a simple way to bring existing Macintosh programs into a multi-user, multi-tasking environment. There's no reason not to hope for this, it's just a long way off.

In the somewhat nearer term, it should be hoped that there will be more Mac applications that run under A/UX, and that the A/UX Toolbox will be able to run multiple toolbox applications simultaneously and exchange (not just read) files with HFS disks. Perhaps the system could handle more gracefully the crashes of Toolbox applications.

In the near term and with all possible urgency, it should be hoped that no one will hold the real world at arm's length, and above all that documentation will illumine that world and not obscure it. ■

**Toolbox applications developed under A/UX work just fine. The problem is that, when importing existing Macintosh applications, the Toolbox works within limitations, and some of these are acknowledged while others are not.**


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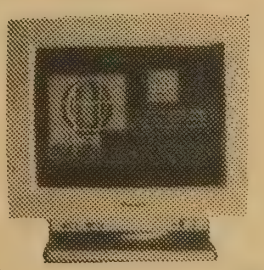

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BY MIKE MARKOWITZ

# The Joy Of Stick

## *Control Device Options For The Apple II*

The choice of a computer hand control device is an intensely personal, almost intimate preference. Some folks love the mouse, others never get the hang of it, especially if the darned critter has more than one button. Non-typists often appreciate the natural, immediate feel of a light pen or touch screen. I happen to like the compactness and precision of the track-ball. But if you are going to play arcade-action games, you've got to have a joystick. This column will review several joystics for the Apple II family.

A joystick converts the mechanical motion of a lever into signals the computer interprets as horizontal and vertical ("x-axis" and "y-axis") displacements of the screen cursor, or aim point. A joystick also has at least two buttons, designated by binary convention, as button 0 and button 1. Button 0 is generally the trigger, in games that involve shootin'. The function of the other button is up to the game designer. The joystick plugs into the computer through a connector generally called the "game port."

There are two basic ways to make a joystick: analog and digital. The Apple II and IBM PC families use the cheaper analog technology. The Commodore and Atari families, which are altogether better game machines, use a more sensitive and costly digital mechanism.

Originally, the Apple II game port was designed for an even cruder control device, a pair of "paddles" for games like *Pong*. All Apple IIs (except the IIc and IIc+) have a 16-pin DIP socket on the motherboard, originally meant for these paddles. It provides three 1-bit inputs or switches, four analog inputs and four 1-bit outputs, along with +5V power and a common ground. Clever hardware designers have used this little port for controlling robots, monitoring the weather, and an amazing variety of other applications that have nothing to do with games.

The 16-pin game port required a rather fragile and expensive connector, and you had to open up the computer to connect or remove a device, so beginning with the Apple IIc, a 9-pin (DB-9) game port was provided on the back panel of the computer. This port is also compatible with the original Apple mouse.

Just to add to the confusion, the Apple IIGS also uses the Apple Desktop Bus (ADB), a four-pin (mini-DIN type) connector that can support a variety of external devices as well as the new Apple mouse. ADB joysticks designed for the Mac SE and Mac II also work on the IIGS. Some things in the Apple world can be plugged and unplugged recklessly, but ADB devices must *never, never* be connected when the computer is turned on. It can fry the little ADB processor chip. Apple recommends turning the machine off and waiting *five minutes*, to allow any stray voltages time to disperse into Entropy Land.

*Mike Markowitz is a computer engineer for a large Southern California aerospace firm. He has been writing about Apple II computing since 1984. You can reach him on AppleLink (MOUSKOWITZ), or The Source (SIG 060).* *Copyright 1989 © Mike Markowitz. All rights reserved*

## Kraft Premium III

Kraft was the first company to make a joystick for the Apple II, and my four-year-old, 16-pin, made-in-USA model is still working perfectly. The latest version, called the Premium II, is made in Korea, and the feel and workmanship are not quite as good. The unit carries a five-year limited warranty. It includes a fire button at the top of the stick, as well as the standard 0 and 1 buttons. There are thumbwheels for calibration, and some tricky toggles on the bottom to disable the Center Return springs. A DB-9 connector at the end of a 6-foot cable plugs into a small adapter box, which in turn plugs into any ADB port.

## Epyx 500XJ

The Epyx 500XJ represents a radical rethinking of joystick design. Its rounded body is designed to nestle in the left hand while the right hand operates the stick. The long, sculptured buttons (rather confusingly labeled "A" and "B") lie directly under the first and second fingers of the left hand. The whole arrangement is optimized for right-handed users and for games that do not require keyboard input in addition to the joystick. A toggle switches Center Return on or off (when Center Return is on, the stick is spring-loaded to return to a central position when you release it; with Center Return off, the stick stays where you leave it).

A Center Adjust button automatically calibrates the device. A tiny leaflet explains how to use it. The 6-foot cable has both DB-9 and gold-plated 16-pin connectors. A nice feature is a DB-9 to DB-15 adapter included in the package. This allows you to plug the same joystick into the standard IBM-PC compatible game port.

The good design is marred by indifferent workmanship—the stick itself felt loose, the press-on label was blistered in places, and the fit and finish were sloppy. Oddly enough, the unit was made in Great Britain. The two-year warranty is encouraging. The garish black and red color scheme clashes with beige or platinum Appleness. The entire unit could use some additional weight, since it tends to slide around on any flat surface.

## CH Flight Stick

This is the Rolls-Royce of joysticks—big and beautiful. The rectangular base, molded in "platinum" colored plastic, measures 7" x 6". The stick itself is matte black, about 6" long, and resembles an aircraft-type control grip. The stick has independent pivots for the x and y axes, and a wonderful, solid, responsive feel. There are x and y thumbwheels for precise calibration. A high-quality milded DB-9 connector includes thumbscrews to secure positive contact.

Button 0 is a trigger for your trigger finger; Button 1, at the top of the stick, is operated by the thumb. Being perfectly symmetrical, the CH Flight Stick is equally comfortable for the superior left-handed 15% of humanity. The IBM PC version of Flight Stick includes a throttle control on the stick (this is supported by software such as Microsoft's *Flight Simulator* and Chuck Yaeger's *Advanced Flight Simulator* from Electronic Arts). Unfortunately, the Apple version lacks this feature—not enough signals available through the connector.

The Flight Stick can plug directly into the DB-9 game port, but CH Products also offers a remarkable ADB adapter called the Mirage, a box about 3" x 4" in size. This allows the joystick to emulate a mouse. You plug the Flight Stick into the Mirage, and then plug the Mirage into any ADB port. Four DIP switches control the movement rate and display area, according to some rather complex rules that are carefully explained in the documentation. To use the Mirage on the IIGS you cannot have the "Fast Mouse" option set in the Control Panel. Since most IIGS and Mac owners already have a mouse, this emulation capability is useful mainly to those with limited space. And if you win the Lottery and trade up to a Mac II, you can still keep the same familiar joystick.

## Evaluation

If games are your life, the choice of a joystick is desperately important. Casual alien-zappers can get by with the cheapest generic Taiwanese clone-stick (about $15) at the Swap Meet, but if you aspire to be the Red Baron, the Ice Man, or Han Solo, consider the CH Flight Stick. There are more elaborate and costly aircraft control-yoke devices available for true flight simulation junkies, but for size, quality, price, and compatibility, it's unbeatable. ■

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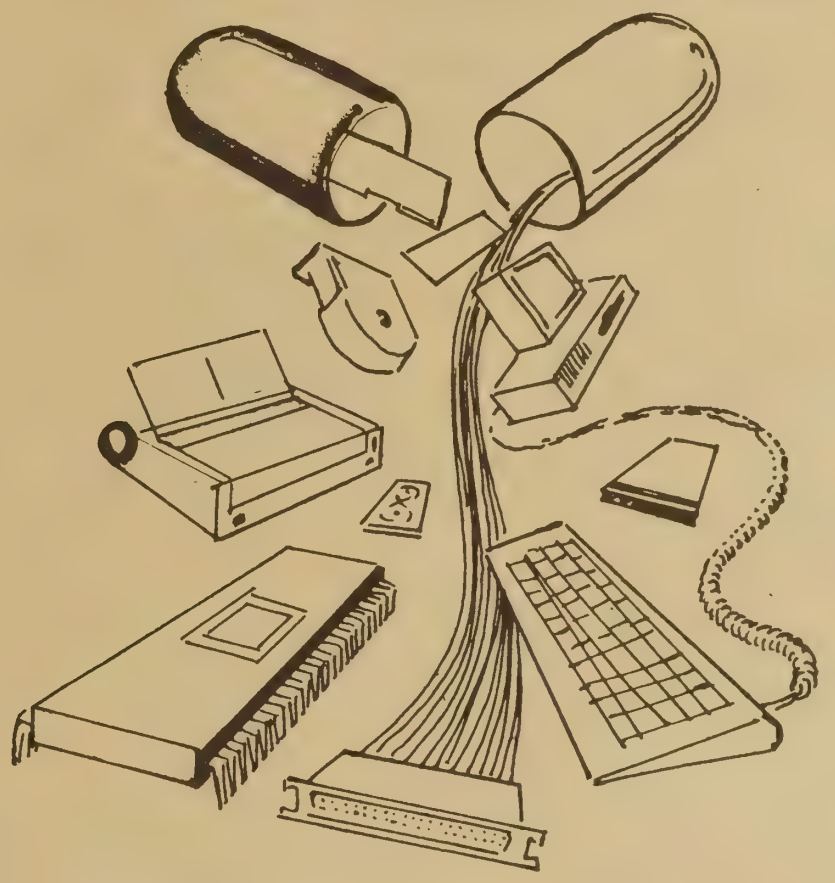

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BY MATTHEW LEEDS

# The Upgrade Shuffle

I'm addicted, I admit it. Technology holds a strong and peculiar attraction for me. It may be something as subtle as minute electro-magnetic fields generated by silicon chips or the full blown fantasy that owning the latest new wiz-bang gadget brings me just a little bit closer to techno-magical control over my environment.

All this and more made it impossible for me to resist when I recently was at my local Amiga retailer and discovered that they had both the Kickstart V1.3 ROM and the autoboot ROMs that would let my Amiga 2000 boot directly from my hard disk. It seemed like a simple upgrade: back up the hard disk, pop in the new chips, reformat the hard disk, and restore the data. That was until Murphy decided to get involved.

I left the store with the new Kickstart, autoboot ROM's for my GVP hardcard, and a new copy of *Quarterback*. *Quarterback* is a hard disk backup and restore utility, one of the best on the market. The latest version lets you backup and restore using two floppies. The earlier version only restored from a single floppy; using two makes it much faster. This new version also supports streaming tape and other high density devices.

Once home, I backed up my 40 Mb Quantum drive. Since it is about half full, this took only two dozen floppies. After this was finished I tested the backup set by reading the catalog of files *Quarterback* writes on the first volume. I'd had occasional problems with earlier versions of *Quarterback*; if it does not recognize the first volume as a valid *Quarterback* disk you cannot restore your data, as only the first volume contained a catalog of files. This has been changed in the new version; now a catalog is written to the last volume as well, but I was not going to take any chances. *Quarterback* approved the first volume and I was ready to install the new chips.

## Inside The 2000

The 2000 is relatively easy to open up. Five screws hold the cover in place, and you do not need to disconnect any cables to remove the cover. For safety's sake I always disconnect the power cable. I then removed the hardcard and set it on the desk. The two autoboot ROM sockets were easy to locate, and the ROMs were clearly labeled as to which ROM belonged in which socket.

Next I removed the screws that held the bracket containing the power supply and floppy drives. This covers the socket that contains the Kickstart ROM and must be moved. It's possible to rest this bracket on its side on top of the 2000 without disconnecting any of the cables attached to the power supply or floppy drives.

*Copyright © 1989, all rights reserved. Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.*

Now it was time to remove the V1.2 Kickstart chip. I don't own a chip pulling tool and use two small screwdrivers as pry bars to pop chips from their sockets. I always get nervous doing this—I'm afraid I'll damage either the chip, the socket, or the motherboard. Generally it's the chip that suffers from my heavy-handedness, and this time was no exception. I bent a few of the pins on the chip as it came out of its socket, but at least nothing broke. I carefully straightened the pins out and then pushed the chip into a piece of anti-static foam.

Getting the new Kickstart into the socket was easy. The old chip had a half-moon divot on one end, the key used to orient it in its socket. The new chip lacked this clear marking, but did have a small circular mark on one end that seemed to serve the same purpose. Naturally the pins on the chip were spread too far apart, but I've learned that all that's required is to press each set of pins against a flat surface and bend them towards each other to align them correctly.

## Enter Murphy

I've also learned not to put everything back together without testing first. I stuck the power cord back into the power supply, and turned the Amiga on. First hint of trouble—the machine refused to show a Workbench request screen. The power light on the front blinked at me, a slow on/off scolding, "you screwed up, didn't you?" The question was, where?

I carefully checked the Kickstart chip to see if any of its pins had been bent or misinserted, but everything looked fine. I checked for little pieces of metal that might have landed on the motherboard—nothing. I checked the cables at the back of the machine, the phase of the moon, and the time of day—also nothing.

I called the store and asked for help. The technical support person at the store had me check everything again. No bent pins, chip aligned correctly, no dangling cables, nothing out of place. I still had the hardcard removed from the machine, and he suggested I also remove the memory expansion card, as the Amiga might being trying to autoboot from it. Sounded crazy to me too, but at this point I was willing to try anything. Still no luck.

Next he had me pull the V1.3 Kickstart chip (more bent pins) and replace the V1.2 chip. Power back up and voila!—a Workbench request screen. Diagnosis: defective Kickstart V1.3 chip. Out of 300 V1.3 chips sold, the store said they had only found two defective. I was glad to have helped them find the needle in the haystack.

Just to be sure, when I returned the defective chip I brought my 2000 along to test it. The tech and I (well, I watched) disassembled my 2000, popped in a new V1.3 Kickstart, and powered it up. A hand asked for a Workbench disk, V1.3, and I was back in business.

**It seemed like a simple upgrade: back up the hard disk, pop in the new chips, reformat the hard disk, and restore the data. That was until Murphy decided to get involved.**

## Hard Disk Tips

Autobooting from a hard disk on the Amiga requires the presence of special information on the hard disk. This information is contained in an area known as Rigid Disk Blocks. To add RDB to a hard disk you must first reformat it. The Great Valley Products people supply software that automates the entire process of formatting a hard disk, installing the RDBs, and copying the basic AmigaDOS system files onto the newly prepared hard disk. The software will even handle preparing partitions on a hard disk of any size or number.

Since there may be times that you want to boot from the floppy drive, the boot priority of the hard disk is set lower than that of the floppy drive. Put a Workbench disk in drive DF0:, and CTRL-CTRL-AMIGA will boot you from that disk. This is useful for playing games, or restoring a crashed hard disk.

I've got two floppy drives on my 2000, and if I don't keep a disk in each they click. This is normal, but also maddening. I usually keep a disk in each just to keep them quiet. Before I added the hard disk autoboot capability, I just kept the boot disk in drive 0 and a scratch disk in drive 1. I could power up the machine and just wait until it finished booting with nary a click to be heard. The first time I tried this with my new setup, it booted off the floppy drive. I pulled out the boot disk from drive 0, stuck the scratch disk in and hit the three fingered salute. This time I got a CLI window on screen and a 1> prompt, in record time. This was not my usual boot sequence.

It turns out that at some point in time I had *installed* my scratch disk. This makes it a bootable disk as far as AmigaDOS is concerned, regardless of the fact that it does not have a S directory, much less a startup-sequence, C directory, or other desirable contents for a boot disk. I now keep a non-installed scratch disk in drive 0, another scratch disk in drive 1, and the only noise out of my 2000 is the gentle roar of the fan punctuated by the occasional muted chatter of the hard drive. Bliss. ■

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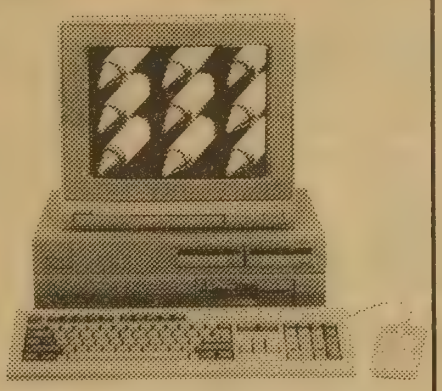

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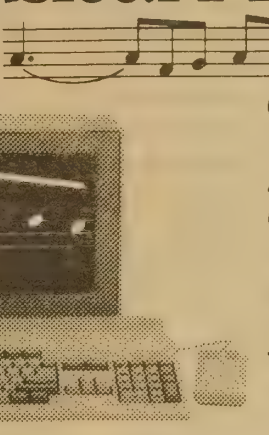

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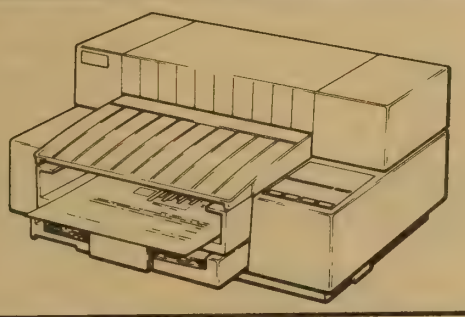

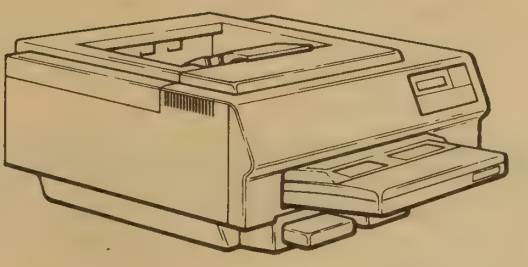

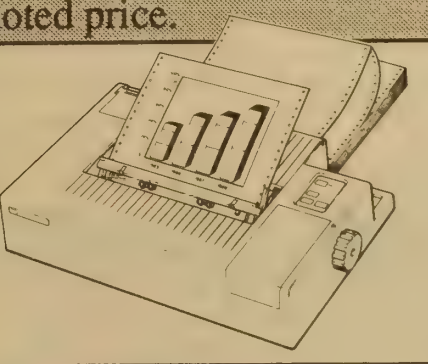

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# USER GROUP NETWORK

## BY MARY EISENHART

Emerging from the crowds and chaos of the Macworld Expo, we find ourselves going through this month's mailbag for more interesting news from user groups. And news interesting to user groups, their members, etc.

I am gratified to report that whereas last month we received no mail whatever from Mac groups in the Southland, the deficiency has been repaired this month with mail from **Maria Sanchez**, who writes to inform us about two groups on the east side of town: the **Whittier Area Mac Users Group** and the **San Gabriel Valley Macintosh Users Group**. The Whittier group meets in La Mirada, just to sustain that element of cognitive dissonance we Mac users find so indispensable—meetings are on the second Saturday of the month at 10 am, at the Granada Heights Friends Church, 11818 S. La Mirada Blvd., Room C-21, La Mirada. If you need more information, please call (213)691-1622. The San Gabriel Valley group, on the other hand, meets at 7:30 pm on first Thursdays at the Pasadena City Library, 285 E. Walnut, Pasadena. Additional details available if you call (213)684-4266.

Up here in the Bay Area, an organization called **CompuMentor** has attracted much favorable notice with its campaign to match computer-proficient volunteers with nonprofit organizations in need of computer help. Volunteers range from beginners to wizards of various persuasions, and are usually able to find a needy organization whose goals they support, to great mutual advantage.

As a result of a fair amount of media attention, CompuMentor has received calls from prospective volunteers and help-seekers all over the country. Rather than try to administer all this from San Francisco, CM prefers to keep these efforts as local and decentralized as possible. So if you're interested in participating locally in this type of activity, or if you're a nonprofit organization in need of computer support—or if you're looking for a worthy and tax-deductible home for some of that obsolete equipment you're getting rid of—give CompuMentor a call at (415)282-4648 and ask for **Randy Dunagan.**

Another Bay Area item that might interest a good many Southlanders is the upcoming **Third Computer Game Developers' Conference**, scheduled for Sunday and Monday, May 7-8, at the Sunnyvale Hilton near San Jose. Planned sessions include subjects like "The Process of Building Games," "Artificial Personalities," "Network Games," "Theft Protection," and one of *our* favorites: "Making Reality Fun." Sponsors and presiding wizards **Stephanie Barrett**, **Tim Brengle**, **Chris Crawford**, **Stephen Friedman**, **Jeff Johannigman**, **Brenda Laurel** and **Dave Menconi** advise early registration because last year's event sold out fast. Registration fee is $125 for postmarks up to March 1, $150 for postmarks March 2-April 1, and $175 for stragglers who don't get their materials in till May 1. (After May 1, you have to take your chances on the availability of tickets at the door.) So if you design, program, or produce computer games, this might be just what you've been waiting for. If so, send your name, address, and check to: Computer Game Developers' Conference, P.O. Box 50282, Palo Alto, CA 94303.

And while we're on the subject of programmers and developers, **Michael Odawa** of the Software Entrepreneurs' Forum (yes, the same Michael Odawa who's declared war on computer viruses in another article in this issue) has announced SEF's upcoming seminar on "Object-Oriented Programming with MacApp," which will be useful to many of those trying to find the most effective approach to writing Mac software. What's being covered? Says Mike: "You'll learn the basic concepts behind object-oriented programming and design. You will also get a solid overview of the architecture of the MacApp toolkit. You do not need to be a Macintosh programmer in order to attend."

The seminar takes place on February 25th from 9 am until 5 pm at the Dunfey Hotel in San Mateo; lunch is included and the hotel offers a special rate to conference participants. Luncheon speaker is **Scott Knaster** of Apple, author of *How To Write Macintosh Software* and *Macintosh Programming Secrets*.

Cost of the seminar is $95 for SEF members and $175 for non-members; registration information is available from SEF at (415)854-7219.

Getting back to the local scene, we recently heard from **Harry Tischler** of Van Nuys on the latest activities of **VICUG**, the **Valley IBM/Compatibles Users Group**, which has expanded its operations considerably. In addition to its regular meeting in Sherman Oaks on fourth Fridays, VICUG also has a new SIG in **VICUG—DTP**, the desktop publishing branch of the family. It meets on second Fridays at 7:30 pm at the Valley Plaza Recreation Center, 12240 Archwood Street in North Hollywood. Both meetings are free of charge (though donating $1 at the door is heartily encouraged), as is group membership, and there's plenty of free parking.

But wait, there's more! For those of you who would rather stay home, there's the **VICUG-BBS** at (818)772-4227, 300/1200/2400, 8-N-1, 24 hours. It features information on group activities, speakers and demos, and offers an online newsletter, a desktop publishing section, and software for download.

If you want more information about the activities of VICUG, give Harry a call at (818)997-6000.

We also heard from **David Legalley** of **SBCUG**, the **South Bay Commodore Users' Group**, which meets monthly (on fourth Tuesdays at 7 pm) in Redondo Beach. The conference room of Home Savings, 1670 Pacific Coast Highway in Redondo Beach, is the place to be. If you'd like more info, fire up your modem and call the SBCUG BBS at (213)545-8653.

Finally, here's some good news for Californians. Especially those with PC Pursuit if they live outside the 415 area code. The **California Public Utilities Commission** now has its own BBS to provide information on Commission activities and solicit opinions, information, and questions from the public. This information comes to us from PUC Public Affairs Chief **Bruce H. Kennedy**, who adds that the board operates 24 hours a day at (415)557-4131 at 300/1200 baud, 8-N-1. **Fred Curry** is the sysop of the board, and if you have questions, you're invited to give him a call at (415)557-3705. So if your utility bill is getting you down (and, this winter, whose isn't?), here's the place to voice your concern to people who actually have something to say about this sort of thing.

Keep those cards and letters coming in. Let us know what's going on with your group and we'll tell the world. Or a little of it, anyhow. The US Mail should be directed to User Group Network, 5951 Canning Street, Oakland, CA 94609. The email, on the other hand, should be directed to **microx** on The WELL (415)332-6106 or to **{pacbell, hplabs, ucbvax, apple}!well!microx** if you're off in the further regions of the Usenet. See you next month.

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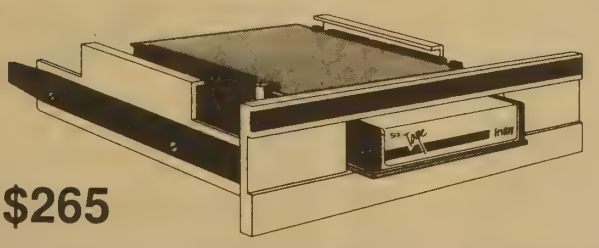

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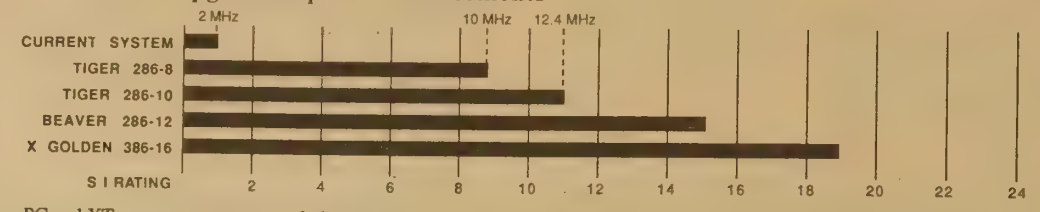


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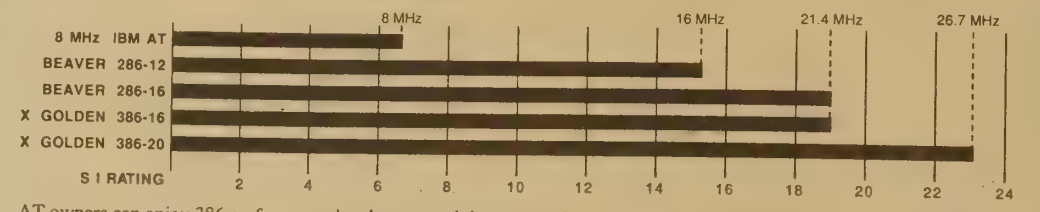


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| CPU | 80286-8 | 80286-8/10 | 80286-10/12 | 80286-16 | 80386-16 | 80386-20 | 80386-20/25 | 80386-16 | 80386-20 |
| CO-PROCESSOR | 80287-6/8 | 80287-8/10 | 80287-10 | 80287-10 | 80287-10 OR 80387 | 80287 OR 80387 | 80287 OR 80387 | 80387 | 80387 |
| CACHE RAM | N | N | N | N | N | N | N | 64K | 64K |
| DRAM TYPE | 64/256K | 64/256K | 64/256K | 64/256K | SIM/DIP 256/1M | SIM/DIP 256/1M | SIM/DIP 256/1M | DIP 256/1M | DIP 256/1M |
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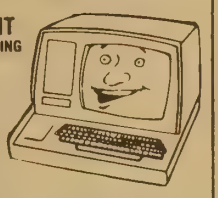

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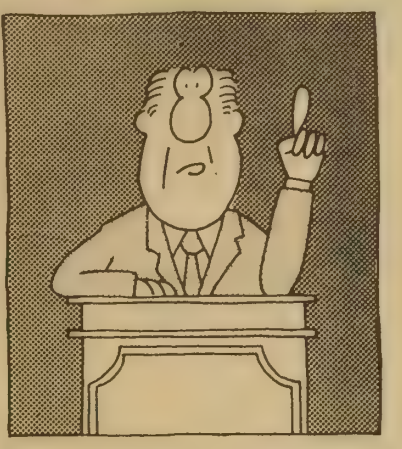

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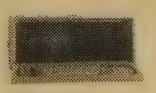

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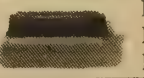

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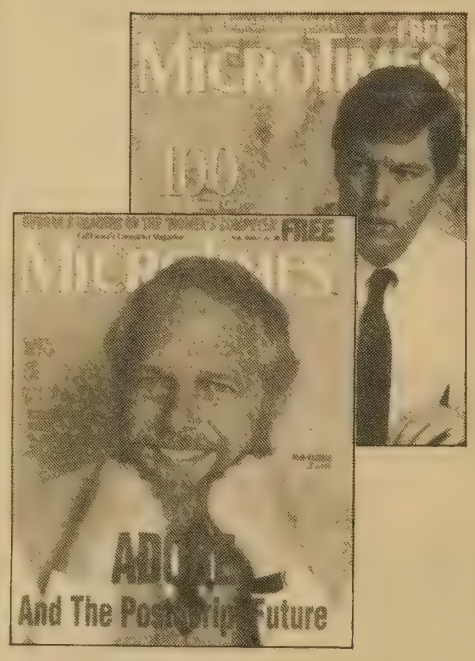


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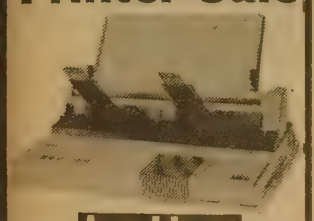

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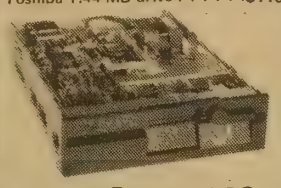

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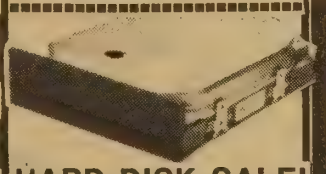

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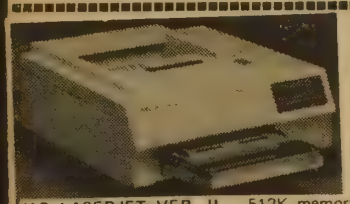

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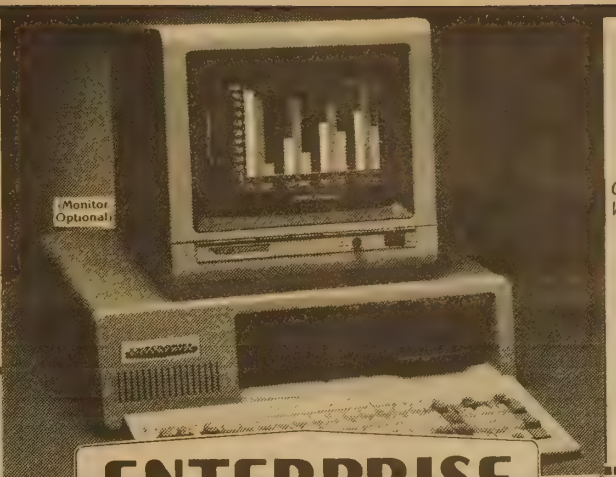


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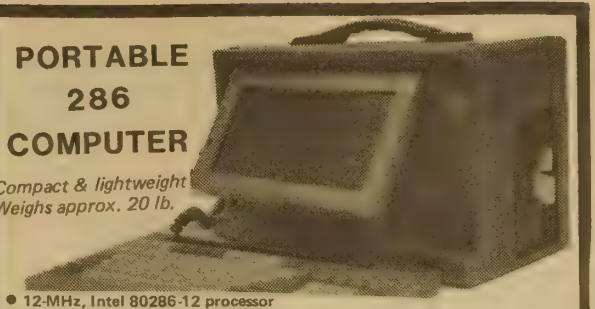

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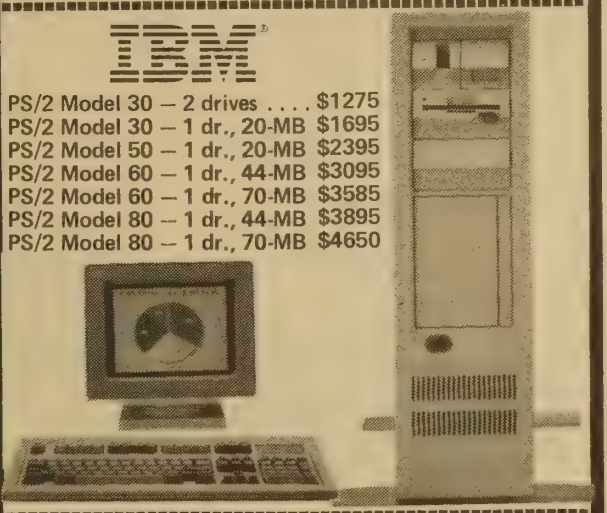

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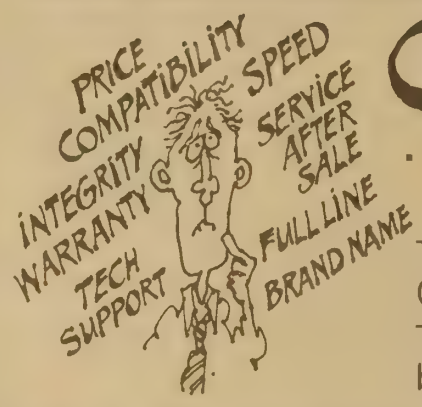


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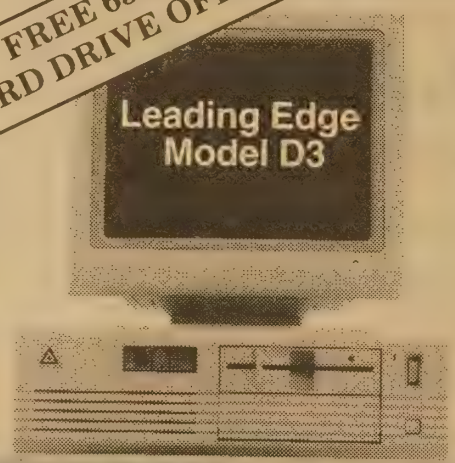


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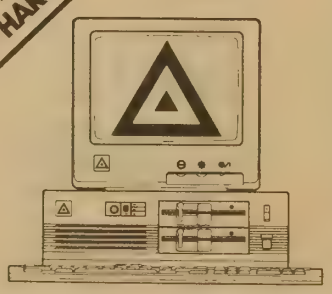

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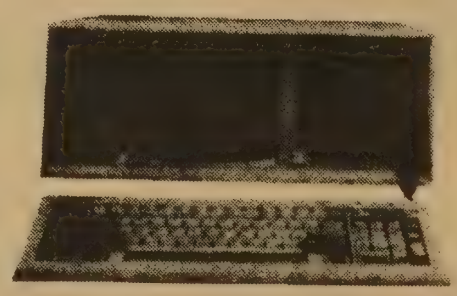

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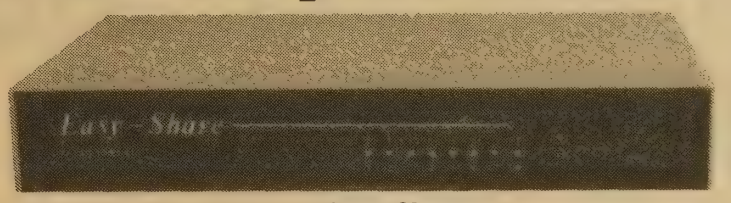


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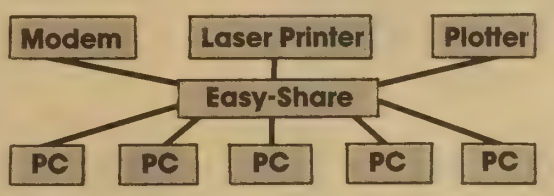


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**MEDCOM INFO BBS.** (714) 996-6666. 24 hrs., 300/1200/2400. Multi-user games, chat, computer art, PC-Pursuit access & info, news IBM-PC freeware/Shareware & mail. Sysop: Bob Reinecke.

**Morrison Hotel.** (714) 752-0145 24 hrs., 300/1200/2400. 10 lines, interactive games and conversation. Conferencing, email and matchmaking. Technical and trivial discussion. Running Skynet software.

**Nebula 6.** (714) 595-6577. 300/1200/2400 8-N-1 24 hrs. Write for a free newsletter. P.O. Box 1071, Walnut, CA 91788. PC-Pursuitable. Sysop: Michael Quirino

**Network XXIII.** (714) 548-4836. 1200/2400/9600 8-N-1 24 hrs. On-Line registration; 1500+ files; conferences; online games. Sysop: Jim Brandon

**PC Exchange.** (714) 956-5468. 1200/2400/9600.

**PC-LAIR.** (714) 839-9580. 8-N-1, 24 hrs., 300/1200/2400. PC/DOS, MSDOS, large PD Software Library. Sysop: Eric Drochner.

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**Software Exchange.** (714) 552-3515. 300/1200/2400 8-N-1 24 hrs. For IBM & compatibles. Over 3000 programs in 152 megs. Fastest-growing BBS in Southern California! Sysop: John Coon

**The Byte Zone.** (714) 491-7635. 300/1200 24 hrs. Serves all Tandy computers & many others, incl. MS-DOS. Features adventure help files, elect. mail,message bases, etc. Sysop: Franco Collino

**The Cheese Factory.** (714) 788-9894. 24 hrs., 300/1200/2400. Official BBS of the Moreno Valley Macintosh User's Group. Macintosh PD software library available for d-load. Sysop: Mike White.

**The End of the Line.** (714) 645-6581. 300/1200/2400 8-N-1 24 hrs. Running Wildcat BBS software. Pub. dom.& shareware for IBM & compatibles. Private/pub. message bases. Scorecast data files. Sysop: Bob Kelly

**The Grapevine BBS.** (714) 549-7886, 24 hrs., 300/1200/2400. 40 & 80 column support on WWIV BBS software. A new telecommunications related BBS. First online 8-8-88, 24 message forums, file transfers of communications related software for all major PCs.

**Toshiba BBS.** (714) 837-4408. 1200 8-N-1 24 Hrs. Toshiba laptop support.

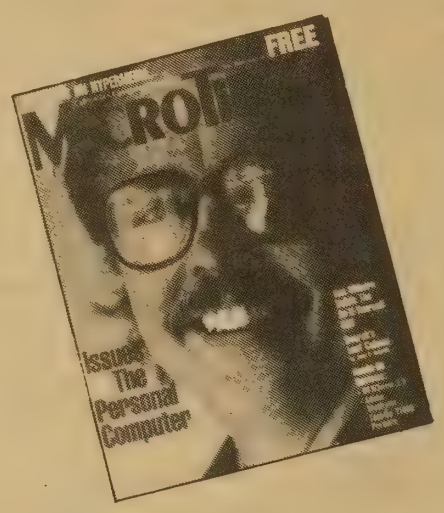
**TripWire TECHnologies (PCB).** (714) 964-1146. 1200/2400 24 hrs. Multi-lingual operations with 7 national echomail areas. (Beta testing PCBmail) Sysop: William Kidd


# No Other Magazines Were Mentioned!

That's right! In a recent survey, the Copley Newspaper Group asked computer retailers in Los Angeles, "What Magazines Were Most Popular With Their Customers?"

Here are the results:

1. PC Magazine
2. Byte
3. **MicroTimes**
4. MacUser
5. MacWorld
6. Lotus
7. Infoworld
8. Newsweek
9. Time




That's it. No other magazines were mentioned. Computer hardware and software retailers in California agree—there's only one local magazine their customers depend on. MicroTimes.

Every month MicroTimes delivers news, reviews, in-depth interviews, up-to-the-minute user group and bulletin board listings and leading-edge opinion from the top analysts and columnists in the industry.

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**Wellspring RBBS.** (714) 856-7996. 300/2400 M-F 5 PM-8 AM. S-S 24 hrs. Medical/AIDS/Software.

**West Monster Castle BBS.** (714) 894-3394 8-N-1, 24 hrs., 300/1200/2400. Located at The Federated Group #03, Westminster, CA. Sysop: Ernie Braza.

### 717

**Dead Board.** (717) 677-9573. Sysop: Captain Trips.

### 800

**APPLESIG on the Source.** (800) 336-3366, 300/1200/2400. International Apple users group with over 700 programs. Fee.

**PC Pursuit.** (800) 835-3001, 300/1200/2400. Registration required.

### 805

**Affection Connection.** (805) 499-7023/529-7311. 24 hrs., 300/1200/2400. 5 lines, private open chat, message board, matchmaking, free public domain software. All computers welcome. Sysop: Ben Richards .Voice: (805) 499-4625.

**Success BBS.** (805) 238-7359. 300/1200 24 hrs. Sysop: Larry Sarver

**The Digital Dungeon.** (805) 683-2436. 300/1200/2400 8-N-1 24 hrs. Open System designed to be an open forum. Primarily a conversation system. Sysops: Jerry Ash, Doug Sander

### 818

**Affection Connection.** (818) 991-8261/704-8588. 24 hrs., 300/1200/2400. 5 lines, private open chat, message board, matchmaking, free public domain software. All computers welcome.

**AMERICOM C.B.C.S.** (818) 967-3108, 10 PM-7 AM, 300/1200. Supports all computers. Mature users, 20 multi-topical subs; test information libraries, section for film/TV production, medical/nursing, home audio/video, photo, debate, religions, hobby, consumer help, HAM and more. Online for over four years. Sysop: Mike L. Lewis.

**DELOS.** (818) 242-1410. 2400 24 hrs. Lo-cost access or free ltd. use. Serving the Gay Community. 10 lines for chatting! Library & many public boards.

**Dial-Your-Match #1.** (818) 842-6900. 300/1200 24 hrs. The original dating BBS on-line since 1981. Fill out a personalized questionnaire & join the fun! (818) 247-6343. Glendale. (818) 506-6300. N. Hollywood. (818) 785-3498. Van Nuys. (818) 845-5325. Burbank. (818) 954-0790. Burbank.

**Fantasy Plaza.** (818) 840-8066. Online adventure game.

**Hard Ball PC Board.** (818) 713-0420. 1200/2400 8-N-1 24 hrs. Programming conference specializing in Pascal. Huge P/D & Shareware Filebase for PC & compatibles..Sysop: The Umnpire.

**Home Loans BBS.** (818) 999-1501, 8-N-1, 24 hrs., 300/1200. Daily update of mortgage rates. Sysop: Online Motgage Services. Voice: (213) 316-5508.

**LEGACY - The Law Network.** (818) 990-7600. 1200 8-N-1 24 hrs. Info on Computer Law, Entertainment Law, Comms. Law. Pro bono conference for free legal advice to non-lawyers. Sysop: Richard H. Kohn, Esq.

**Lynzie's Motherboard.** (818) 508-6482., (818) 989-3875. 300/1200/2400/9600 8-N-1 24 hrs. Matching, group and private chat system, local social events. S.F.V. Sysop: Lynzie Flynn

**Mysteria.** (818) 353-8891. 300/1200/2400. Occult & general text files, CP/M, turbo Pascal. Sysop: Phil Hansford

**Oracle.** (818) 509-9681. 300/1200/2400 8-N-1 24 hrs. 9 phone lines. System password MICROTIMES for higher access. Free demo version of Oracomm BBS software. Sysop: Gary Young

**ORCHID.** (818) 999-1501. Direct access to employers. We are not a job agency. Type GO JOBS upon entry. Sysop: Mindey.

**Plaza Party Line.** (818) 842-3322. 300/1200. Chat with 11 other callers. No hourly charges. Adult sections. Lots of women callers. Online since 1983.

**Rockwell International.** (818) 999-1501. Job opportunities. Resume submissions over the computer. Type GO ROCKWELL upon entry. Sysop: Mindey.

**The Bear's Lair.** (818) 988-6694, 300/1200/2400, 24 hrs. Macintosh oriented, 200Mb on line, multiple message sections. Sysop: Bruce Gerson.

**The Board with No Name.** (818) 785-3340. 300/1200. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 16 lines.

**The Consumer & Business Network.** (818) 360-4679. 24 hrs., .1200/2400. Arc files, business and financial info, classified ads, discussion, Mac files, messages & mail, newsbytes, on-line store, real estate, USA Today, Westlink Report & HAM radio, PC Pursuitable. Sysop: Kenneth R. Wilcox.

**The Ledge PC Board.** (818) 352-3620. 300/1200/2400/9600. All systems welcome, full support for IBM PC/AT compatibles.

**The Software Bank.** (818) 993-5516. 300 to 9600. Atari ST only. 65 megs. Node #95 of FNET. Exchg. messages & files w/users on other FNET BBS nationwide thru our network. Sysop: The Software Bank

**TUG-NET (Technical & User Groups Network).** (818) 882-6045. MS/DOS and CP/M supported. Voice: (818) 957-4721.

**Valley On-line Shopping Network.** (818) 772-4227. 300/1200 (soon to be 2400). Provides local businesses the opportunity of selling their products on-line to local and national computer consumers. Sysop: BRAINS.

**VICUG-BBS.** (818) 772-4227 N-8-1, 24 hrs., 300/1200/2400. See what is happening at VICUG (speakers, demos, newsletter, (VICUG-RAM), disk bank, desktop publishing sub group, etc. Sysop: Linda Rohrbough. Voice:

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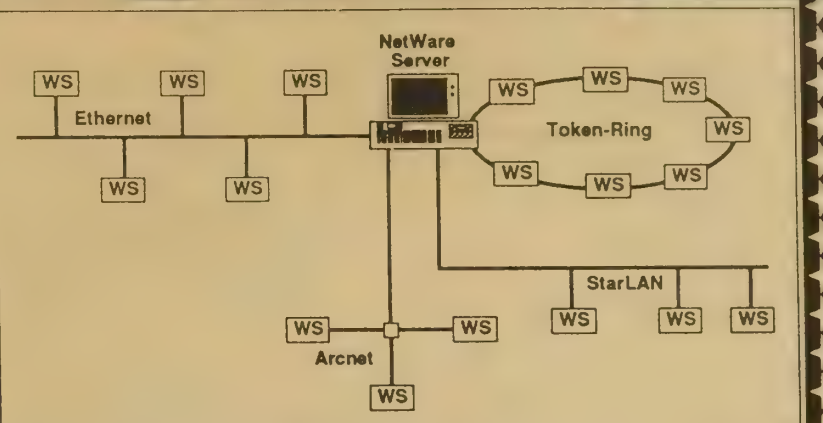


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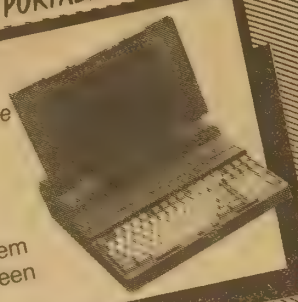

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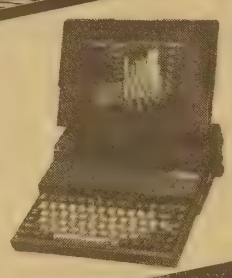
- Detachable hi-res gas plasma screen



**T5100**
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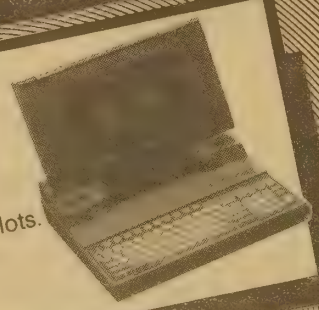
- Built-in EGA display system.
- 15 lbs.



**T3200**
*The portable replacement for the desktop PC*
- 12MHz 80286 processor.
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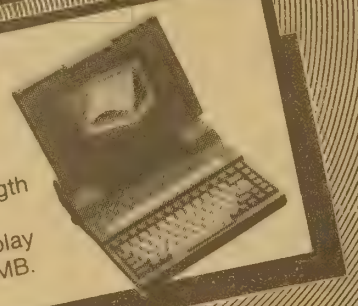
- 40MB hard disk (29 ms access)
- Built-in EGA display system.



**T3100e**
*Full desktop capabilities in a 12.8 lb portable*
- 12MHz 80286 microcprocessor
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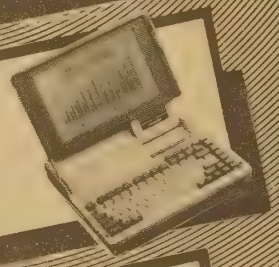

**T1600**
*Broad expansion possibilities.*
- 80C286, 12MHz/6MHz.
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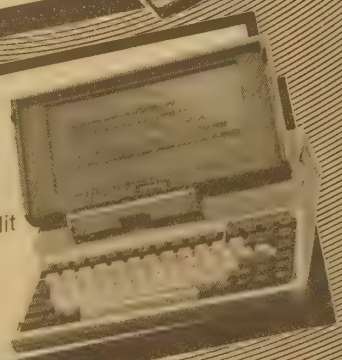

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**24th Street Exchange.** (916) 451-7179. 300/1200/2400 8-N-1 24 hrs. Opus-based system. Free access. Lge. selection pub. domain files for IBM & compatibles. Special interest areas. Sysop: Don Kuhwarth/Laura Stua.

**Changewinds HST.** (916) 923-3862. 24 hrs., 300/1200/2400/9600. This system specializes in keeping the highest quality files online. TradeWars 1000 v9.03, 18 MHz system, many echomail conferences. Sysop: Ron Deaver.

**CompuHelp.** (916) 786-3923. 24 hr database-bulletin board system for the Blind and Visually Impaired. Sysop: National Association Of Blind And Visually Impaired Computer Users, Inc.

**Dial-Your-Match.** (916) 275-1265. Redding. (916) 736-0739. Sacramento.

**Hackney's Hideout BBS.** (916) 961-1042. 1200/2400 8-N-1. Includes AT&T users conference. Sysop: Rich Hackney.

**Night-line Network Central.** (916) 331-5043, 300/1200, 8:00 PM to 8:00 AM daily. Forum for individuals, clubs and organizations that want to network nationally with others. Sysop: Eric Thomas.

**Phoenix Landing BBS.** (916) 966-8243. 300/1200/2400. Macintosh oriented but many other computers are supported. File areas for Mac and other computers. Supports echomail conferences including ECHOMAC and BAYMAC.

## *ASSOCIATIONS*

**ACCPAC Accounting SIG Of UCLA Users Group.** Meeting: 2nd Wednesdays @ 7 PM. Users, CPAs, consultants and other business people interested in sharing information on Computer Associates ACCPAC Accounting Software. Call Donna Miller, (213) 393-0244.

**California Educational Computing Consortium CCCE.** For information write Herb Garrett, Long Beach City College, 4901 E. Carson Street, Long Beach, CA 90808.

**Computer Professionals for Social Responsibility.** Meetings: Most third Wed. 7:30 PM UCLA. CPSR/LS focuses on computer system risk and reliability and on privacy and civil liberties issues.

**International Blind Users Group (I-BUG).** Part of the National Association of Blind and Visually Impaired Computer Users. Membership consists of access to CompuHelp, a 24 hour online database/bulletin board system, and receiving CompuHelp On-Disk, a modem database-bulletin board system on two double-sided disks. (916) 783-0364 or 645-8036.

**L.A. Real-Time Problem Solvers.** Meetings: 4th Saturdays, 10 AM to 1 PM. Hawthorne Public Library, 12700 S. Grevillea Ave., Hawthorne. We speak A/D, SBC, RISC, FORTH and C. We support real-time, real-world hardware and software problem solving, such as firmware, device drivers, instrumentation and very smart toasters. (213) 371-0589.

**North Orange County Computer Club (NOCCC).** Meetings: Monthly on Sunday, @ Chapman College near downtown Orange. Help for beginners, SIGs, educational activities, monthly newsletter. Open to any computer user. (714) 998-8080.

**Realtor Microcomputer UG (RUG).** Meetings: 4th Thurs. 7 PM Pasadena BOR, cnr. Orange Grove & Los Robles, Pasadena, CA.

## *USER GROUPS*

### AMIGA

**Amiga Friends.** Meetings: 3rd Sun. Rancho Santiago College, Rm R-124, 17th & Bristol, Santa Ana. Call for current meeting info: (714) 775-7237 (24 hrs.) or write: P.O. Box 4186, Huntington Beach, CA 92605.

**Amiga Special Interest Group.** Meetings: 1st Sunday except holidays. Chapman College, 333 N. Glassell, Orange, CA. Amiga SIG is part of the North Orange County Computer Club, a thousand member organization together 12 years.

**Amiga Users Group of Long Beach.** Meetings: 3rd Sun. 1-4 PM Mid-Cities Nat'l Bank, NE corner Lakewood & Artesian, Bellflower. We have a class that meets the second Sat of each month,1 to 4 pm. Something different every month.

**Bits & Pieces Amiga Group of Anaheim.** Meetings: each Tues. 6:30-10 PM 1130-A North Kraemer Blvd., Anaheim, CA. DOS Classes, tech. help & more. BBS: (714) 630-8897.

**LAAUG-Los Angeles Amiga Users Group.** Meeting: 3rd Wednesdays @ 7:30 PM. Veteran's Auditorium at Overland Ave. & Culver Blvd. Many SIGs, Rookie, music, video, monthly PD disks.

**Pacific Computer Club.** Meetings: 2nd Thurs. 7 PM 391 S. Madison, Pasadena, CA.

**San Fernando Valley Amiga Users Group (SFVAUG).** Meetings: 2nd Thursdays, 7 pm, American Legion Hall, 7338 Canby Ave., Reseda. Call: Randy, (818) 719-9211.

**South Bay Amiga Dudes.** Meetings: 3rd Thursdays, 7 pm, Redondo Beach Blvd., Lawndale. Call: Charlie Breene at (213) 540-2834.

**South Orange Commodore Klub (SOCK).** Meetings: 3rd Saturday 9:00 A.M. Union Savings, 23688 El Toro Road, El Toro, CA. For Commodore 64/128 users and Amiga users. One-hour general meeting is followed by separate group meetings for each.

### AMSTRAD

**AMSTRAD User Group, U.S.A.** Meetings: 4th Tues. 7 PM & 8 PM Venice High School, 13000 Venice Blvd. Since Sears dropped the PCW8256, group formed so users/owners can support each other.

**Amstrad Users Club Of Orange County.** Meetings: 3rd Saturdays, 10 am til 2 pm. Board Room upstairs in the Santa Ana Library, Civic Center & Ross streets. For more information call: (714) 953-6471.

### APPLE

**Apple/Valley Computer Club.** Meetings: 2nd Wednesdays, 7:30 pm, Valley Presbyterian Hospital, meeting room #3. Discussion on Apple, Mac, Amiga, IBM. BBS: (818) 782-6471. Up loading/down loading. Visitors welcome. Eamon games, misc. Voice: (818) 988-1752.

**Original Apple Corps.** Meetings: 2nd Sun. 12:00 Noon 3rd Floor Community Room, Santa Monica Mall. First Apple group ever. SIGs for AppleWorks, Telecomm, Educators, Macintosh. Call Fred Duffy at (213) 396-5515.

**Tri-City Apple Users Group.** Meetings: 3rd Thurs., 7:00 PM, 50 N. Hill Ave., Pasedena. Call (818) 846-6682. Friendly Apple II experts.

### ATARI

**Atari Computer Association Of Orange County.** Meetings: 2nd Sun. Rancho Santiago College, Room W101, Santa Ana. BBS: (714) 540-7378.

**Atari Computer Enthusiast Society.** (ACES). Call: Perry Robins, (818) 760-7210.

**Pasadena Area Local Atari Computer Enthusiasts (PALACE).** Atari 8-bit and ST support. Chris Roberts, (818) 359-1697, 220 N. Encinitas Ave., Monrovia, CA.

**Santa Clara Valley Atari Computer Enthusiasts (SCVACE).** Meetings: 1st Thurs. 7PM Mint Canyon Moose Lodge, 18000 W. Sierra Hwy, Canyon Country. 8-bit group. Atari ST special group now forming.

**South Bay Atari Computer Enthusiasts (SBACE).** Meetings: 2nd Tuesdays, 7:30 pm, Lomita VFW Hall, 1865 W. Lomita Blvd., Call: Alan, (213) 542-7870.

**South Bay Atari ST Computer Club.** Meetings: last Mon. 8 PM 15331 Praire Ave. Lawndale.

### COMMODORE

**Bits & Pieces Commodore Computer Group of Anaheim.** Meetings: each Tues 6:30 PM 1130-A N. Kraemer Blvd. (Kraemer & La Palma), Anaheim. Offers public domain software, demonstrations, interactive training on your computer. $33 annual dues.

**Commodore 64 Software Users Group.** For new Commodore owners. One on one help. Call (714) 531-2977 for info.

**Mother Lode Commodore Users Group.** Meetings: 2nd & 3rd Thursdays. Calaveras

County Water District Board Room. Supports the Commodore PET, VIC, 64, Plus/4, C-16 & 128.

**Nebula 6.** Call BBS for more info & online glance at what group offers. BBS (714) 595-6577 300/1200/2400. Write for info: P.O. Box 1071, Walnut, CA 91788.

**OKOK Computer Users Group.** Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and CP/M operating systems.

**Orange County Commodore Technical Users Group (C-TUG).** Meetings: 4th Sun. 11:00 AM ,4th & Tustin, P.O. 1497, Costa Mesa, CA . 92628. Newsletter; 2 BBS's; door prizes; demos, raffles, speakers, (714)750-3003

**Pacific Computer Club.** Meetings: 2nd Thurs. 7 PM 391 S. Madison, Pasadena, CA.

**Pasadena Commodore Computer Club.** Meetings: 1st and 3rd Weds. 7:00 PM Circadian Room, Pasadena City College Cafeteria. Colorado Blvd & Hill, Pasadena. Call (818) 447-2212 after 2:30 PST or write P.O. Box 163, Arcadia, CA 91006.Supports C64 and 128 machines.

**South Bay Commodore Users' Group.** Meetings: 4th Tuesdays, 7:00 pm, Home Federal Savings Conference Room, 1670 Pacific Coast Highway, Redondo Beach.

**South California Commodore Users Group.** Meetings: 3rd Tuesday each month, 7:00 P.M., MidCities National Bank, Lakewood and Artesia Blvds., Bellflower, CA.

**South Orange Commodore Klub (SOCK).** Meetings: 1st Wed. 7 PM Laventhol & Horwath, Exec. Conf. Rm.7th Fl., 3699 Wilshire Blvd., LA, CA.

### dBASE

**UCLA PCUG dBASE SIG.** Meetings: 3rd Wednesdays, 7:30 pm. Call: (213) 874-7471.

**Valley West dBASE Users Group.** Meetings: 3rd Mon. 7:00 PM Blue Cross Of California, 21555 Oxnard St., Woodland Hills. Call (818) 343-9033 or write P.O. Box 16971, Encino, CA 91416.

### DEC

**DECUS Rainbow Pacific PC-LUG.** Meetings: 2nd Wed. 7:00 PM Digital Equipment Corporation, 6101 W. Centinela, Ave., Culver City. Digital Equipment Computer Users Society. Free to DEC users. Call Karen Danforth (818) 787-8736 or write P.O. Box 2278, Van Nuys, CA 91404.

### DESKTOP PUBLISHING

**VICUG–DTP.** (Valley IBM/Compatibles Users Group). Meetings: 2nd Fridays, 7:30–10:00 pm. Valley Plaza Recreation Center, 12240 Archwood St., North Hollywood, CA. Call: Harry Tischler, (818) 997-6000.

### EPSON

**San Fernando Valley Epson QX User Group.** Meetings: 3rd Tues. 7 PM Fallbrook Sq. Comm. Rm., Fallbroook Mall, 6633 Fallbrook Ave. Canoga Park.

### IBM AND COMPATIBLES

**Calsorfic PC Club.** Meetings: 1st Tues. 5:15 PM 9 Holland, Irvine, CA.

**Greater South Bay PC User's Group.** Third Thursdays, @ 7 PM, Building behind Christ the King Lutheran Church, 2706 W. 182nd St. Torrance. Newsleter, BBS, more! Guests welcome. Call for more information. Evening: (213) 532-2123.

**IBM & Compatibles Users Group-Ontario Area.** For information call: (714) 982-1270.

**Kenny's Computer Club.** Meetings: Each Saturday 8:00 A.M. t133 Locust St. Apt. 19, Long Beach, CA. For those with an interest in graphics, DTP, Lotus, Autocad, games, databases and word processing.

**Kern Independent User Group.** Meetings: Write Kern Independent PC User Group, P.O. Box 2780, Bakersfield, CA 93303.

**Long Beach IBM Users Group.** Meetings: 3rd Tuesdays. 7 PM, Woodruff Medical Plaza, 3816 Woodruff Ave., Room A, Long Beach. Contact: Jim Wells. Call: (213) 439-7114.

**OKOK Computer Users Group.** Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

**Orange Coast IBM PC User Group.** Meetings: last Sat. 9 AM Science Hall, Orange Coast College, Costa Mesa, CA.

**Orange County IBM PC Users Group.** Meetings: 2nd Thursdays 7:30 PM. Bradford Retirement Community Center, 1180 N. Bradford, Placentia. Meetings feature guest speakers on hardware and software topics related to the interest of our members. Other activities include sharing tips and problems, access to club library and a club newsletter. Call: Mike Lyons, 2114 W. La-Palma, Anaheim, CA 92801. (714) 774-3236.

**Pacific Computer Club.** Meetings: 2nd Thurs. 7PM 391 S. Madison, Pasadena, CA.

**Pasadena IBM Users' Group.** Meetings: 3rd. Wed. CalTech, Bridge Bldg., Rm. 201.

**PC*UG Computer Club.** For Hughes Aircraft Employees. Call (213) 334-3422.

**QUICK & EASY Mailmaster User Forum.** Meetings: monthly LA/Airport area. Users interested in maximizing performance of Quick & Easy.

**Saddleback College IBM-PC Users Group.** Meetings: 3rd Sat. Room 210, Business and General Science Building, Saddleback College, Mission Viejo. Call Susan Gordon at (714) 582-4650.

**South Bay Users Group (SBUG).** Meetings: 1st Sun. Mercury Savings, Long Beach, CA.

**South County PC Users Group.** Meetings: 3rd Sat. 9 AM Great American Savings, 23688 El Toro Rd., El Toro, CA.

**Technical Users Group (TUG-NET).** Meetings: Call for info (818) 882-6045. BBS (818) 882-6045.

**The IBM & Compatibles User Group (ICUG).** Meetings: 4th Thurs. 6:30 PM or 7:30 CAL Lutheran Univ., 60 W. Olsen Rd., Thousand Oaks. Group is 5 yrs. old & has 150 members Meetings begin at 6:30 for beginners, 7:30 regular members.

**The Southern California K-Man Users Group.** Meetings: 1st Wednesday, 7:00 P.M., Laventhol and Horwath, Executive Conference Room, 7th Floor, 3699 Wilshire Blvd., LA. Demo of the month features new software and hardware.

**TRS Nybblers.** Meetings: 1st Wed. 7 PM 2006 W. Magnolia, Burbank. Supports MS-DOS, CP/M, IBM or IBM clones.

**Valley Computer Club—IBM.** Meetings: 1st Wednesdays, 7 pm, Burbank Bd. of Realtors Bldg., 2006 W. Mangolia, Burbank. Call: Aaron Epstein, (818) 769-1837.

**VICUG (Valley IBM/Compatible Users Group).** Meetings: 4th Fridays, 7:30 pm, Mercury Savings Bank, 14801 Ventura Blvd., Sherman Oaks.. Call: Harry Tischler, (818) 997-6000.

**VICUG–DTP** (Valley IBM/Compatibles Users Group). Meetings: 7:30–10:00 pm, Valley Plaza Recreation Center, 12240 Archwood St., North Hollywood, CA. Call: Harry Tischler, (818) 997-6000.

### KAYPRO

**OKOK Computer Users Group.** Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

### LEADING EDGE

**Leading Edge Computer User Group of Ventura County.** Meetings: 2nd. Sat. 10 AM Camarillo Library, 3100 Ponderosa Dr., Camarillo, CA. Lectures on hard/floppy disk usage; program demos; beginner classes. Single: $20, couple $25.

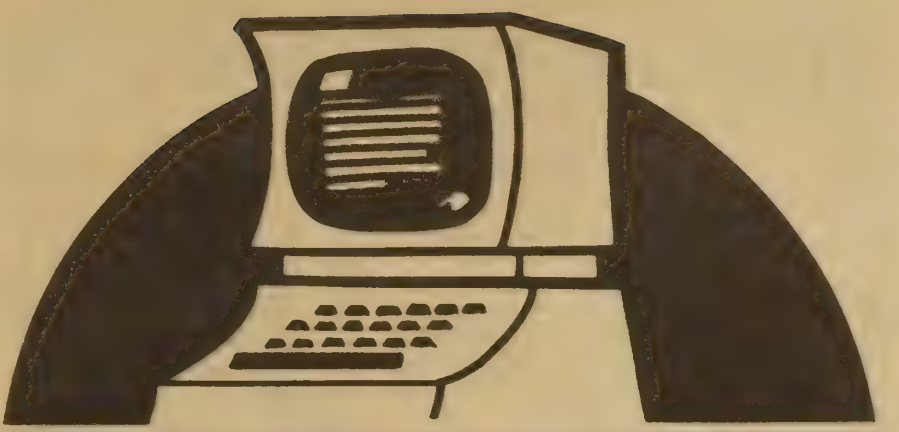
### MACINTOSH

**California State University Macintosh Users Group.** Meetings: California State University, Long Beach.

**Conjo Ventura Macintosh Users Group, Inc.** Meetings: 1st Thursdays, Thousand Oaks Public Library, 1401 E. Janss Road, Thousand Oaks. Call: Ed or Ellie Darling at (805) 584-8733.

**LAMG (Los Angeles Macintosh Group).** Meetings: Call (213) 278-LAMG or write 12021 Wilshire Blvd. #349, Los Angeles, CA 90025.

**MacValley.** Meetings: 3rd Tues. 7:30 PM Burbank High School Cafeteria at Burbank Blvd. and Third St. Call David Lagerson,

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**Original Apple Corps.** Meetings: 2nd Sun. 12:00 Noon 3rd Floor Community Room, Santa Monica Mall. First Apple group ever. SIGs for AppleWorks, Telecomm, Educators, Macintosh. Call Fred Duffy at (213) 396-5515.

**SBAMUG (South Bay Apple Mac User Group)** Meetings: Last Wednesday of each month, 7:30 PM, Ticor Title, 4240 Artesia Blvd., Torrance. Call (213) 316-7738.

**South Coast Macintosh Users Group.** Meetings: First Tuesdays, @ 7 PM, Goleta Library. Publishes a newsletter with reviews, offers advice, support for Mac users, discounts at local dealers. Call: Vince Leamons, 685-7295.

**West Orange County Macintosh Users Group (WOCMUG).** Meetings: Last Tuesday. F & M Bank in Rossmore Center, Orange County, CA.

### NETWARE

**Orange County Network Users Group (OCNET).** Meetings: 2nd Tues. Wyle Labs, Irvine CA. Open to users, consultants, all interested in NETWARE. Call Mark at (714) 955-0616

**Netware User Group Los Angeles (LOSNET).** Meetings: 2nd. Wednesdays. Welcomes consultants, CPA's, dealers and users interested in sharing information on NETWARE and related products. Call Fane, (213) 452-1335. 2716 Ocean Park Blvd, Santa Monica 90405.

### OPEN SYSTEMS

**Open Systems Accounting, So. Cal Users Group (OSASCUG).** Meetings: 4th Wed. Wyle Labs, Irvine, CA. Users of Open Systems, Altos Accountant, CADO, & Rexon accounting software. Open to end users, dealers and consultants. Call Mark at (714) 955-1724.

**OSAS Systems Users Group Los Angeles (OSASUGLA).** Meetings: 1st Wednesdays. Welcomes consultants, CPA's, dealers, users and QI's interested in sharing information on OSAS and related products. Call Fane, (213) 452-1335. 2716 Ocean Park Blvd., Santa Monica 90405.

### OSBORNE

**OKOK Computer Users Group.** Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

### TANDY/RADIO SHACK

**Los Angeles - Wilshire Color Computer Users' Group.** Meetings: 2nd Sat. 12:30-5:30 PM Felipe de Neve Library's Comm. rm., 2820 W. 6th St., LA, CA.

**South Bay Users Group (SBUG).** Meetings: 3rd. Fri. Mercury Savings, 22939 Hawthorne Blvd., Torrance, CA.

### TEXAS INSTRUMENTS

**LA 99er Computer Group,** 4th Wednesdays, August 24, Sept. 28, Oct. 26. @ 7:15 PM, Torrance Public Library, Torrance Blvd. @ Madronna. Call: Teresa Masters, (213) 271-6930.

**San Fernando Valley TI-99/4A User Group.** Meetings: 2nd Wed. 7:30 PM Doctor's Conf. Rm., Sherman Oaks Hospital, 4929 Van Nuys Blvd. Call for info: (818) 248-9558.

**SFV 99ers.** Write: 2823 Sanborne Ave., La Crecenta, CA 91214.

**TI Professional.** Call (213) 397-9668.

**TI Users Group of Orange County.** Meetings: 3rd Thurs. Peek Funeral Home, 7801 Bolsa Ave., Westminister. Call 633-7317.

### TIMEX/SINCLAIR

**Timex-Sinclair Users Group.** Meetings: 3rd Mon. 7 PM 11828 Jefferson Blvd., Culver City, CA.

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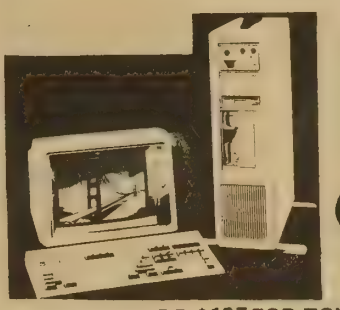

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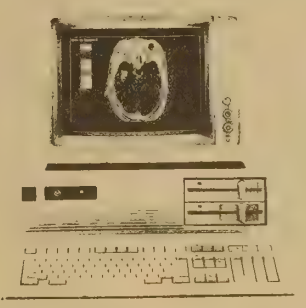

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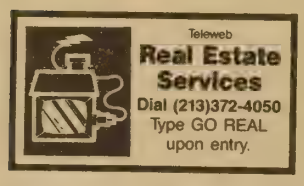


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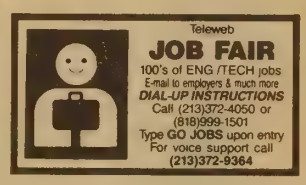


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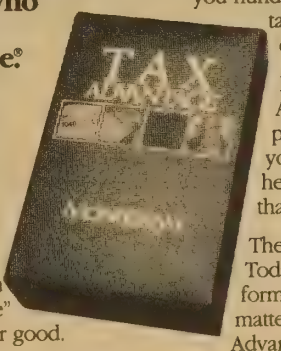


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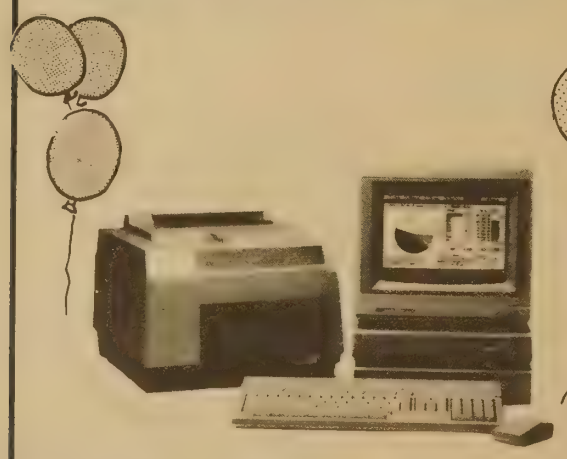

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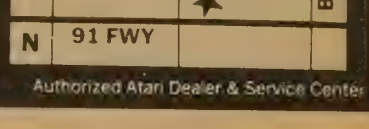


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DVORAK'S LAST COLUMN • BY JOHN C. DVORAK

# Desktop Publishing: Trend Or Fraud?

## A Study In Contrasts Via MCI (It Happened in 1987!)

Most people who read a Dvorak column realize that it's one of many columns written during the month and only part of a bigger picture I try to paint. The most interesting aspects of the picture are often the sketches which never are seen. This means items, letters, and observations that never get printed for one reason or another. Here's a couple of contrasting (and interesting) letters sent me that I wish I could turn into columns.

The first is the typical, "You don't know what you're talking about" letter. This one was the condescending "You don't know what you're talking about, but I like you anyway" letter. It concerned nothing more than a mention I made in *PC Magazine* about desktop publishing. It came in over MCI Mail (note the date).

*Date: Thu Jan 08, 1987 8:04 am EST*
*From: Media Net Ltd. / MCI ID: 299-6554*
*TO: John Dvorak / MCI ID: 318-4192*
*January 5, 1987*

*Dear John:*
*I read your Inside Track column in the January 27th issue of* PC Magazine *with great interest. It seems you and other editors at* PC Magazine *are starting to push Microsoft's* Windows *as a standard for Desktop Publishing. As an integrator in a field of Computer Assisted Publishing I've got some real questions about this. First of all, and I'm not the first to say this, Desktop Publishing isn't a market as much as it's a technique. I believe that the market will disappear by the end of the year as a lot of these functions are introduced into the more popular word processing packages. This will be particularly true as more software vendors add PostScript support.*

*So what this leaves us with is the world of "real publishing" which is not particularly well served by Microsoft's* Windows. *For publishing applications, an MS-DOS environment is already stretching things anyway, therefore who needs* Windows? *The work that is being done by GSS and their support of the CGI Standard better serves the publishing industry.*

*This is somewhat of a lament because there isn't any graphics environment that really serves the professional publishing. None of these environments are addressing the problems of font exchange, file exchange or, God forbid, the whole issue of process color.*

*CGI, however, has the advantage of not being locked into any particular operating system. This is important to the high end of the marketplace where Apollo or Sun types of workstation are required. Let me put this another way—professional publishing calls for some heavyweight hardware and software. Are you or any of the editors at* PC Magazine *ready to give up your Atex system and trade it in for* PageMaker*?!*

*Please don't take this as criticism, it's not meant to be. You and the other editors represent the most independent and accurate view of the PC and compatible marketplace. I get a headache trying to figure out what to do about a "Graphics Environment"; some direction would be better then none. Happy New Year, Jordan Glogau*

I still scratch my head when reading this, especially when nobody in the personal computing arena thinks that *PageMaker* was ever designed to run a newspaper or large magazine! It's not untypical of the interesting letters and memos you get over MCI, though. In that same year I got this Press Release/memo that I should have passed to the public. It seems to balance the first note in some unusual way:

*Date: Sun Oct 25, 1987 1:34 am EST*
**RECEIPT From: Wes Thomas PR/ MCI ID: 224-4194*

*TO: John C. Dvorak / MCI ID: 318-4192*
*Subject: Instant books*

*First "instant desktop-published books" published in Canada; McCutcheon offers "free instant typesetting for book authors" at CEPS*

*BOSTON, Oct. 26, 1987—Want to publish an instant book on a hot new topic—the stock market crash, for instance? Now's your chance to have it typeset—free. McCutcheon Graphics of Toronto, one of Canada's largest prepress suppliers to the graphic arts industry, claims it can publish any text-only book in under an hour and is looking for authors to prove it. The company is offering free typesetting to book authors who want to create the first U.S. "instant desktop-published books" during CEPS (and afterwards until the end of the year) to promote the company's* PageOne *automated book typesetting software.*

*Simply bring in a manuscript produced on a Macintosh computer (*Word *or* MacWrite *format) to booth 934 and select, from a single menu, one of 50 templates. According to Thad McIlroy, McCutcheon Electronic Publishing Systems Product Manager, the rest is totally automatic—right up to camera-ready galleys (master pages, ready for printing).*

**Desktop publishing is alive and well, technique or no technique. Sorry, Jordan, but Aldus, Adobe and the rest are making more money than ever.**

*"We have all the elements at CEPS to publish a book in under an hour:* PageOne *for typesetting, high-speed laser printers, and even automated binding systems," says McIlroy.* PageOne *fully automates three expensive, time-consuming bottlenecks in book production: book design, typesetting, and proofreading of typeset galleys. The key is its templates, representing the 50 most common book designs. The author or publisher simply selects a book design from a catalog—a sort of "design-by-number" approach. The program is appropriate for books without illustrations, such as novels and simple non-fiction books.*

*First instant desktop-published books: Canadian book publisher Lester & Orpen Dennys has already used* PageOne *to create four "instant desktop-published books":* The Solitary Outlaw, Parachute Ward, Brazilian Journal, *and* Tranter's Tree, *all published this year.*

*The trick to achieving book-publishing quality is to laser print at 125% enlargement and then photostat-reduce at 80% to get sharper type," he said. "I challenge anyone to tell the difference in printing and design quality between these books and any other one in a book store without a magnifying glass." For demanding publishers,* PageOne *can also be used with high-quality, slower typesetters, such as the 2540-dots-per-inch Linotronic 300.*

The second memo is the typical press release that I never use in my columns (until now). Maybe all press releases should be held for at least one year before use. Whatever the case, desktop publishing is alive and well, technique or no technique. Sorry, Jordan, but Aldus, Adobe and the rest are making more money than ever. ■

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*John C. Dvorak graduated from the University of California. He is a contributing editor of PC magazine and MacUser, considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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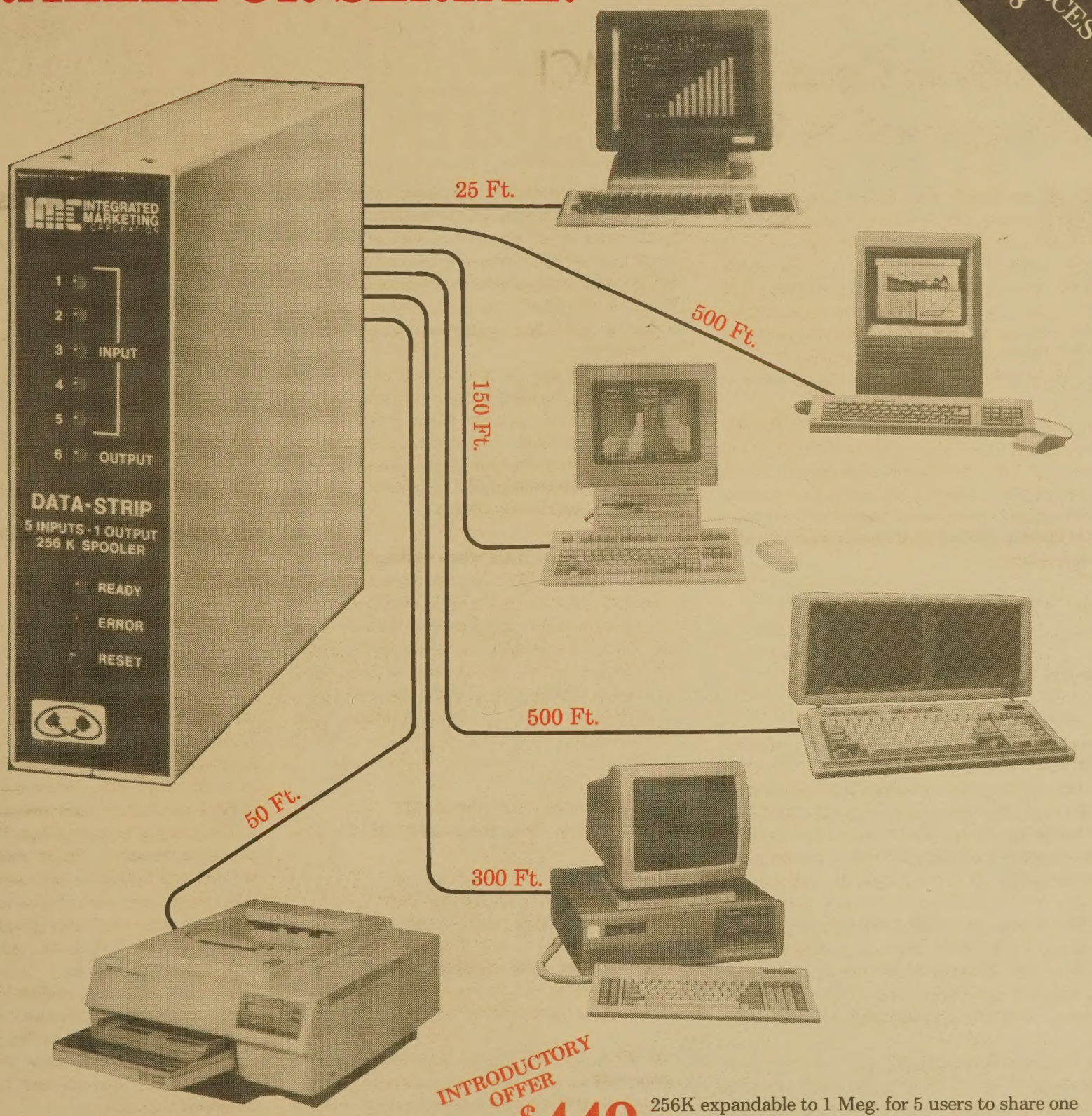


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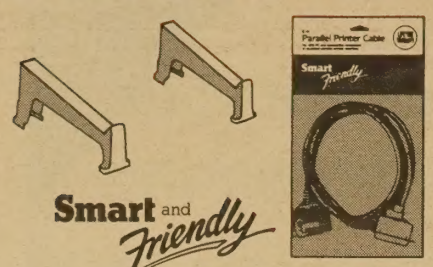


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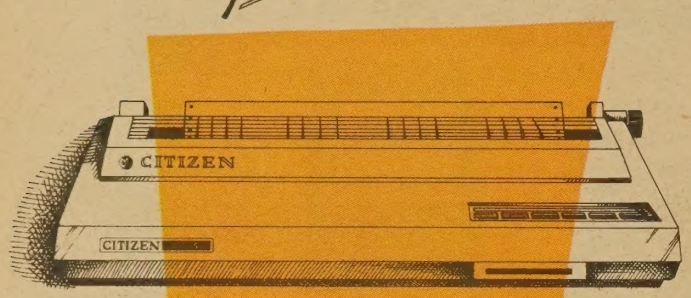


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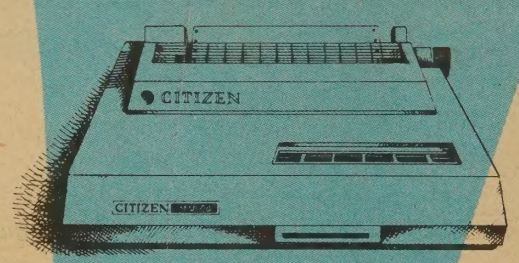


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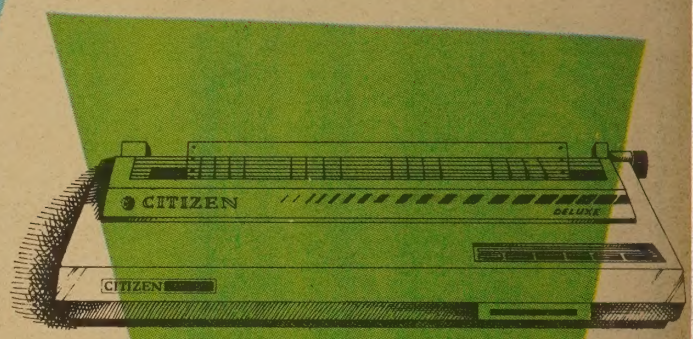


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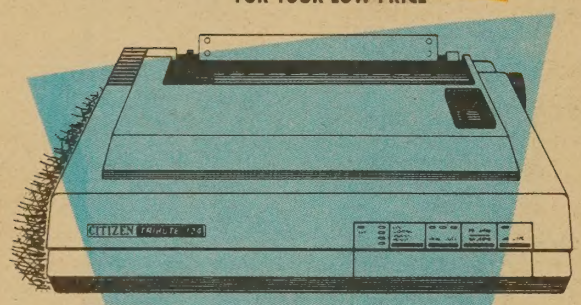

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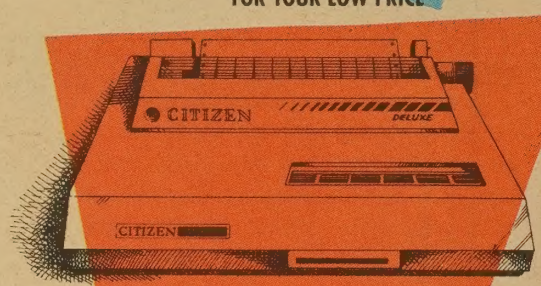


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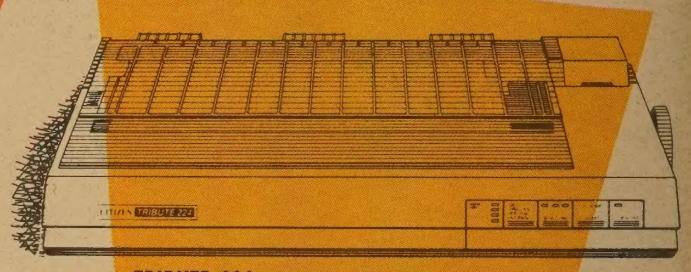

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